THE MARINE RECORD.

DEVOTED TO COMMERCE, ENGINEERING AND SCIENCE.

$2.00 PER YEAR. **ESTABLISHED 1878.** 10c. SINGLE COPY.

VOL. XVII. CLEVELAND, OHIO, FEBRUARY 1, 1894. NO. 5

LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

PRESIDENT:
JAMES CORRIGAN, - - Cleveland, Ohio.

SECRETARY:
CHARLES H. KEEP, - - Buffalo, N. Y.

TREASURER:
GEORGE P. MCKAY, - Cleveland, Ohio.

COUNSEL:
HARVEY D. GOULDER, - Cleveland, Ohio.

VICE PRESIDENTS:

E. M. PECK,	Detroit.	GEORGE G. HADLEY,	Toledo.
WASHINGTON BULLARD,	Buffalo.	H. A. HAWGOOD,	Cleveland.
J. S. DUNHAM,	Chicago.	JAMES MCBRIER,	Erie.
A. B. WOLVIN,	Duluth.	DAVID VANCE,	Milwaukee.
C. A. EDDY,	Bay City.	F. J. FIRTH,	Philadelphia.

BOARD OF MANAGERS:

S. D. Caldwell,	Buffalo, N. Y.	E. M. Peck,	Detroit, Mich.
Peter P. Miller,	Buffalo, N. Y.	D. C Whitney,	Detroit, Mich.
E. T. Evans,	Buffalo, N. Y.	H. S. Hodge,	Detroit, Mich.
James Ash,	Buffalo, N. Y.	A A. Parker,	Detroit, Mich.
W. Bullard,	Buffalo, N. Y.	J. L. Higgie,	Chicago, Ill.
J. J. H. Brown,	Buffalo, N. Y.	Jesse Spaulding,	Chicago, Ill.
John Gordon,	Buffalo, N. Y.	J. S Dunham,	Chicago Ill.
John Rice,	Buffalo, N. Y.	John Keith,	Chicago, Ill.
M. M. Drake,	Buffalo, N. Y.	Jos. Austrian,	Chicago, Ill.
W. P. Henry,	Buffolo, N. Y.	W. R. Owen,	Chicago, Ill.
Edward Smith,	Buffalo, N. Y.	C. W. Elphicke,	Chicago, Ill.
James McKenzie,	Buffalo, N. Y.	W M Egan.	Chicago, Ill.
Thomas Wi son,	Cleveland, Ohio.	George G. Hadley,	Toledo Ohio.
M. A. Bradley,	Cleveland, Ohio,	W. S. Brainard,	Toledo, Ohio.
James Corrigan,	Cleveland, Ohio.	L. S. Sullivan,	Toledo Ohio.
H. M Hanna,	Cleveland. Ohio.	A. W. Colton,	Toledo, Ohio.
George P. McKay,	Cleveland. Ohio.	James Davidson,	Bay City, Mich.
H G. Dalton,	Cleveland, Ohio.	Charles A. Eddy.	Bay City, Mich.
Harvey H. Brown,	Cleveland, Ohio.	O. W. Blodgett,	Bay City, Mich.
John W. Moore,	Cleveland, Ohio.	F. W. Wheeler,	Bay City, Mich.
B. L. Pennington,	Cleveland, Ohio.	Alex. McDougall,	Duluth Minn.
W. J. White,	Cleveland, Ohio.	David Vance,	Milwaukee. Wis.
Henry A. Hawgood,	Cleveland, Ohio.	R. P. Fitzgerald,	Milwaukee, Wis.
W. C. Richardson,	Cleveland, Ohio.	J. C. Ricketson,	Milwaukee. Wis.
J. C. Gilchrist,	Cleveland, Ohio	Conrad Stark,	Milwaukee, Wis.
W D. Rees,	Cleveland, Ohio.	F. W. Gilchrist,	Alpena, Mich.
John Mitchell,	Cleveland, Ohio.	Alvin Neal,	Port Huron, Mich.
R. R. Rhodes,	Cleveland, Ohio.	C. T. Morley,	Marine City, Mich.
Caleb E. Gowen,	Cleveland, Ohio.	W. E. Chapman,	Sandusky, Ohio.
James W. Millen,	Detroit, Mich.	Frank J. Firth,	Philadelphia, Pa.
W. Livingstone, Jr.,	Detroit, Mich.	Frank Owen,	Ogdensburg, N. Y.
David Carter,	Detroit, Mich.		

COMMITTEE ON FINANCE:

H. M. Hanna,	Cleveland, Ohio.	D. C. Whitney,	Detroit, Mich.
H. H. Brown.	Cleveland, Ohio.	W. P. Henry,	Buffalo, N. Y.
James Corrigan,	Cleveland, Ohio.	J. H. Brown,	Buffalo, N. Y.
H. A. Hawgood,	Cleveland, Ohio.	David Vance,	Milwaukee, Wis.
Thomas Wilson,	Cleveland, Ohio.	R. P. Fitzgerald,	Milwaukee, Wis.
M. A. Bradley,	Cleveland, Ohio.	John G. Keith,	Chicago, Ill.
J. C. Gilchrist,	Cleveland, Ohio.	J. S. Dunham,	Chicago, Ill.
E. M. Peck,	Detroit. Mich.		

COMMITTEE ON AIDS TO NAVIGATION:

David C. Carter,	Detroit, Mich.	W. M. Egan,	Chicago, Ill.
H. S. Hodge,	Detroit, Mich.	Frank Owen,	Ogdensburg, N. Y.
George P. McKay,	Cleveland Ohio.	A. W. Colton,	Toledo, Ohio.
H. G. Dalton,	Cleveland, Ohio.	James Davidson,	Bay City, Mich.
B. L. Pennington,	Cleveland, Ohio.	Alvin Neal,	Port Huron, Mich.
W. C. Richardson,	Cleveland, Ohio.	E. T. Evans,	Buffalo, N. Y.
Thomas Wilson,	Cleveland, Ohio.	Wash. Bullard,	Buffalo, N. Y.
John W. Moore,	Cleveland, Ohio.		

COMMITTEE ON LEGISLATION:

S. D. Caldwell,	Buffalo, N. Y.	Wm. Livingstone, Jr.,	Detroit, Mich.
James Ash,	Buffalo, N. Y.	James Millen,	Detroit, Mich.
E. T. Evans,	Buffalo, N. Y.	Jesse Spaulding,	Chicago. Ill.
P. P. Miller,	Buffalo N. Y.	C. A. Eddy.	Bay City, Mich.
John Gordon,	Buffalo, N. Y.	Alex. McDougall,	Duluth, Minn.
Wash. Bullard,	Buffalo, N. Y.	W. S. Brainard,	Toledo, Ohio.
H. M. Hanna,	Cleveland, Ohio	F. J. Firth,	Philadelphia, Pa.
James Corrigan,	Cleveland, Ohio.		

COMMITTEE ON INSURANCE:

W. S Mack,	Cleveland, Ohio.	John Rice,	Buffalo, N. Y.
H. A. Hawgood,	Cleveland, Ohio.	Edward Smith,	Buffalo, N. Y.
J. C. Gilchrist,	Cleveland, Ohio.	W. S. Brainard,	Toledo, Ohio.
J.T. Hutchinson,	Cleveland, Ohio.	W. M. Egan,	Chicago, Ill.
A. A. Parker,	Detroit, Mich.		

THE GREAT CATARACT IN HARNESS.

The final test of the great water power tunnel at Niagara was made last Thursday, water from the river being let down on three big turbine wheels and out again through the monster tunnel. To the Niagara Falls Paper Co., better known perhaps as the "Soo" Paper Co., belongs the distinction of developing 3,300 horse power in a manner never before attempted in hydraulics. An immense wheel pit, three 1,100 horse power inverted turbines and plenty of water were the means. The turbines were built by R. D. Wood & Co., of Philadelphia, after special patterns and designs of Prof. E. Geyelin, a celebrated French engineer. They are three in number, and strictly speaking are called the Geyelin improved inverted journal turbines. The water was let in from the big canal of the Cataract Construction Co., and the huge penstocks filled up with water. The head is sixty-five feet, the greatest that any wheels have been operated under.

The water was turned on by degrees, and the wheels began to revolve slowly and noislessly. They moved in perfect form as the water gushed up from beneath on the wheel buckets. The upright shaft transmitted the power to the vertical shafts, and soon there was the whirring of the countless minor shafts through the great mills. The test was witnessed by the officers of the company, the designer and the makers of the wheel. It was Chicago capital that brought all this about. The company is composed almost entirely of Chicago men, J. L. Norton being president and treasurer; E. A. Hamill, vice president; and John C. Morgan, formerly of Battle Creek, Mich., secretary and general manager.

ANOTHER GREAT CANAL.

The canal that is to unite the North Sea with the Baltic—a work conceived and begun by Bismarck—is said to excel, from an engineering standpoint, the Suez, Corinth and Manchester canals, while its commercial and strategic importance fairly entitles it to rank as "the Suez Canal of Europe." The canal will extend from Holtenau on the Kieler Fjord to Brunsbuttel on the River Elbe, a distance of sixty miles. At Grunthal, the watershed between the Elbe and Eider is passed and over the gigantic cutting, at a height of 130 feet above the water surface, has been built a railway bridge with a span of 470 feet. At normal water level the canal will be nine fathoms deep, and it will have a width of twenty-two yards on the bottom, and of thirty-six yards on the surface at lowest tide. It will be free from locks and sluices along its entire course, but at each end a double gate will guard against dangerous tides. The work will be completed in a few months, the construction time to be seven years, and the cost will be about £8,000,000.

CHICAGO'S NEW DRY DOCK.

More than a year ago the Chicago Ship Building Co. began to plan an immense dry dock in connection with its shipyard on the Calumet river. The necessary financial arrangements have now been completed and work will begin at once. It will be ready to receive its first craft next August. In size the new dock will be 425 feet long, with an easy extension to 475 feet, 100 feet wide at the top and 80 feet wide at the bottom. The width of the gate will be 70 feet and there will be 17 feet of water over the water-sill. The longest boat on the lakes is 380 feet long. This will be the maximum for a few years.

There has been no place on Lake Michigan where a steel steamer could be repaired successfully after meeting disaster. None of the dry docks were near steel building shipyards, and there are but few large enough to hold the ordinary lake boat of steel construction. While the new dry dock will get a large amount of general work on craft of all kinds, it will be built primarily as a place of repair for steel steamers. Owing to the great expense of pumping the water out of an immense dock, the company has completed a marine railway for yachts, tugs and small craft generally. The marine railway has proved cheaper and more effective than dry dock for these small craft. It is something new on the lakes and its success is already attracting attention among marine men.

IRON AND STEEL PRODUCTION.

The American Iron and Steel Association has received from the manufacturers complete returns of the production of pig iron in the United States in 1893, and also complete returns of the stocks of unsold pig iron in the hands of makers or their agents at the close of the year. The total production of pig iron in 1893 was 7,124,502 gross tons, against 9,157,000 tons in 1892, 8,279,870 tons in 1891, and 9,202,703 tons in 1890. The report says that "the decrease in the production of pig iron is over 22 per cent. less than in 1892. In the following table is given the production of pig iron by half years during the last two years:

Periods.	1892.	1893.
First half	4,679.683	4,562,918
Second half	4,387,317	2,561,584
Total	9,157,000	7,124,502

"As compared with the first half of 1893 the production in the second half of that year shows a decrease of nearly 44 per cent., the largest semi-annual decrease in production of which there is any statistical record. All the states show a reduced production of pig iron in the second half of 1893 as compared with the first half, with the single exception of Georgia, which is not a large producer of pig iron at any time."

CAPTAIN JOHN H. SMITH DEAD.

Capt. John H. Smith, better known to all marine men as Captain Harry, died at Grand Haven Saturday night. No man on the lakes has led a more eventful life than the deceased. Capt. Smith was born in Denmark in 1810, and went to sea with his father at the early age of thirteen. He ran away and went in an English ship trading to India and China and afterward was engaged in smuggling opium from China. He was also on a slaver which carried slaves to New Orleans, and at one time they were chased up one of the rivers on the coast of Africa by a British man-of-war, where all the crew died with fever except himself and one boy.

In 1836 he was in the United States marine service, serving through the Seminole war in Florida. He was married in 1853 and has had six children, four of whom survive him. He has been a resident of Grand Haven forty years and sailed out of that port until within the last few years. He was then appointed light-house keeper. After giving this up he retired, but was a sailor to the last, as just before he died he said to a friend, "My cable is slipping and I cannot last much longer."

A CASTLE IN THE AIR.

One of the curiosities of the great exhibition to take place next year at Antwerp will be a literal castle in the air. We understand that a company has been formed to carry out the plan of M. Tobianski, an ingenious engineer, who has designed a sort of raft, having an area of 180 square feet, and made of bamboo canes and steel and aluminum piping. Upon this is built a most luxuriously fitted up restaurant. The raft is held floating in the air at 500 feet from the ground by a number of balloons, and an arrangement of anchoring by means of cables will, says M. Tobianski, prevent the restaurant from rocking even in the strongest wind. Two small captive balloons, each holding from eight to ten persons, will serve as lifts to keep up communication between the aerial restaurant and the earth. There is to be a regular system for supplying gas to the balloons, and at night the exhibition will be lit up by an immense electric light projected from the raft. The whole thing can be lowered to the ground, by especially constructed windlasses, in about ten minutes.

NEWS AROUND THE LAKES.

BUFFALO, N. Y.

Special Correspondence to The Marine Record.

Mr. Alfred John Russell, of the firm of Russell & Watson, of this city, was married last Thursday, at Somerset, Mass., to Miss Blanche Bianca Davis, daughter of Capt. Baylis Davis, of the Fall River line. After the ceremony the happy couple left for a wedding trip through the South.

It is announced that an immense steel rail concern has decided to locate a plant in this city. It is composed of men prominent in business circles of New York, Pittsburg and Buffalo. The general manager is Abram Reese, of Pittsburg, who says the production will at first be largely comfined to the smaller sizes of rails. The plant is to cover about eight acres, and will at the start employ about 500 men, with an output of 100 tons a days.

The Rivers and Harbor Committee of the House gave a long and interesting hearing Tuesday, upon the subject of the proposed extension of the Buffalo harbor breakwater. Judge Daniels and Mr. Lockwood appeared before the committee to ask for the incorporation into the River and Harbor bill of a direction to the War Department to cause a survey to be made at Buflalo and an estimate of cost, together with the plans for the extension of the other breakwater.

According to the statement filed in the supreme court the affairs of the Buffalo and Niagara Navigation Co. are in very bad shape. The estimated deficit will amount to something like $75,000. The petitioners for the winding up of the company state that the company is so hopelessly insolvent that a continuation of business on any basis is impossible. The chief assets of the company are the steamers Shrewsbury and William Harrison. The former steamer is in Toledo and has been libeled for debt. Peter A. Porter, the Cataract Bank, Mark S. Packard, and Alex J. Porter are among the claimants.

C. H. Keep, secretary of the Lake Carriers' Association, appeared before the River and Harbor Committee of the House Monday and submitted an argument on the subject of raft towing on the Great Lakes. Mr. Keep desired that the committee should insert in the forthcoming bill provision limiting the dimensions of the raft thus towed. He furnishes the committee with data showing the extent of the raft towing business and how rafts of large size were not only a menace to navigation, but, in some instances, would cause a jam in some of the narrow passages. He also asserted that the larger rafts oft times became unmanageable and thus increased the danger to commerce.

Elaborate plans and specifications have been prepared for the construction of docks on Squaw Island. The enterprise is being pushed by real estate men. There will be 22,000 feet of docks available for slips, some of these docks being 400 feet wide. The plans call for seven miles of railroad tracks. A street forty feet wide and paved with Medina stone on a concrete foundation, will run the length of the island. The piers will be made some narrower and some wider, in order to afford accommodations for all classes of traffic. There will be two tracks on each pier. The plans include two railroad and one wagon bridge to the mainland. The plan also includes a scheme to utilize the current for water power to generate electricity for light and elevator power. Squaw Island is 5,400 feet, or over a mile, in length on the river side. The slips will be from 500 to 1,100 feet long.

MILWAUKEE, WIS.

Special Correspondence to The Marine Record.

Capt. Daniel Sullivan has been appointed to the command of the steamer William H. Wolf.

The annual ball of the marine engineers was given at Kindergarten hall, on Greenbush street, Friday night and was a very enjoyable party.

The steamer City of Fremont was purchased at Marshall's sale by George Hurson, of the Goodrich Line, for $3,300.

The Sheriff Manufacturing Co. are building a 10 by 12 condensing engine for the Honduras Transportation Co., of Racine. They are also putting a new crank shaft into the steamer J. C. Pringle and making a wheel 9½ feet in diameter for the steamer W. H. Barnum.

Your correspondent paid a visit to the new Milwaukee fire boat James Foley. Capt. Archie Campbell showed him over her and gave a description of her splendid engines, pumps, boiler, etc. She is splendidly equipped and fitted out, and is pronounced one of the best, if not the very best fire boat in the United States.

The H. Witbeck Company, of Marinette, having sold its entire cut of lumber for the next five years to a Buffalo firm, no more of the cut will be shipped by the Marienette Barge line. This will reduce the tow of the Perrett to only six barges, or two per trip, unless the Peshtigo Company continues to furnish one, as they did the latter end of last season.

The Milwaukee Dry Dock Co. are giving the Anchor Line steamer Lehigh new upper works, from the plank sheer up, comprising new stanchions, rail, carlings, deck beams and spar deck, also new bulkheads around her engine-room and part of a new main deck. They are giving the steamer Samoa new stanchions and main decks, and the schooner Sweetheart new stanchions and main decks.

Considerable miscellaneous work has either been completed or is still in progress at the west shipyard. The steamer Samoa's repairs appear to be the most important. An enumeration of the improvements includes new stanchions, some new deck beams, entirely new deck, partial renewal of the forward house and alteration of her interior cabin arrangement. The steamer J. C. Pringle is receiving entire new deck and hatch coamings, and has had her topsides caulked. The steamer Joys left the boxes the other day after having been thoroughly calked all over, had her rudder fastened and been given part new stem.

Fred Underwood, general superintendent of the St. Paul, Minneapolis and Sault Ste. Marie railway, and R. Hebard, general manager of the "Soo Line" steamers, were in Milwaukee last Friday, and while here made arrangements to have the steamer George H. Dyer put in another season on the route between Gladstone and Buffalo. Mr. Hebard considers the Dyer the handiest package freight steamer afloat, and claims that with her general arrangement and machinery freight can be handled at a cost of from three to eight cents less per ton than on the ordinary coarse freighters. The Dyer has five freight hatches, all of which can be worked at the same time.

The following transfers of vessel property have been recorded at the Milwaukee customs office: Schooner Lilly Amiot, William Haskin to Nelson Austin, of Sturgeon Bay, the whole, $500; schooner Nancy Dell, John Bronn to Martin Hickey, of Bailey's Harbor, three-eighths, $750; tug Milwaukee, Henry Starke, of Arcadia, Mich., to William A. Starke and Conrad Niederman, of Milwaukee, ten fifty-sixths, $1; tug Calumet, Henry Starke, of Arcadia, Mich., to William A. Starke and Conrad Niederman, of Milwaukee, ten fifty-sixths, $1; schooner Annie O. Hanson, Walter S. Johnson to Theodore Plathner, one-half, $1.

TOLEDO.

Special Correspondence to The Marine Record.

The Shrewsbury deal, by which it was expected that all claims against the boat would be taken up, has fallen through. An organization composed of local capitalists and the Buffalo and Niagara River Transportation Co., former owners of the boat, was about completed to pay the current debts, aggregating about $5,000, and keep the Shrewsbury on her regular route to the island. In this organization the Buffalo parties were to take the largest share of the stock, as they held a claim against the boat for part of her purchase price, amounting to $32,500. This arrangement would have been perfected, but a few days ago the Buffalo and Niagara River Transportation Co. failed and is now in the hands of a receiver. The deal is off, and parties interested say that a new organization is not probable. For this reason additional libel suits have been, and more will be, filed, andthe steamer will undoubtely be sold.

Messrs. D. B. Smith and J. Kent Hamilton returned from Washington Saturday night, after being given a hearing by the House Committee on Rivers and Harbors. Mr. Smith says he expects Toledo will get an appropriation of $100,000 for this year's work in improving and protecting the straight channel. He put before the committee the advisability of affording a protection at the outer end of the straight channel, of widening the channel, and of placing additional protection to the channel at the "turn out," when the outer range lights are passed. The committee asked for $200,000 at least, as the estimate cost of the work is given by the engineers at $265,000.

MARINE CITY.

Special Correspondence to The Marine Record.

The work on the cabins of the new steamer Santa Maria is progressing rapidly, and the work on her machinery is about completed. She will be ready for business when navigation opens.

J. C. Miller has sold the Hattie T. Brown to Au Sable parties; consideration, $550. Her cabins have been altered and she will be used as a fishing tug on Saginaw Bay.

The barge Mingoe has been shifted to the Lester shipyard in Belle river. She is receiving a new fore-mast.

The repairs on the steamer Salina have been completed. She was given some new stanchions and new upper works aft. Capt. John A. Miller will have command of her this season.

CHICAGO, ILL.

Special Correspondence to The Marine Record.

L. M. Coe, of Cleveland, was in this city Tuesday.

The schooner Michigan was chartered by Elphicke & Co. for corn to Buffalo at 2½ cents.

The V. O. T. Co.'s tug Calumet is receiving one of Beck's latest improved steam steerers.

W. M. Egan has chartered the steamer John Craig, schooner J. H. Rutter and steamer Tom Adams for corn to Buffalo at 2½ cents.

Cook, Calbick & Co., have sold the schooner Levi Grant to Capt. K. Nelson of Sheboygan, Wis., and the schooner Jesse L. Boyce, to West Bay City parties.

The schooner G. J. Boyce was towed by the tugs Tom Brown and D. T. Helm to the Illinois Central elevator to load on Tuesday.

The steamer City of Ludington, of the Goodrich Line, bound to Chicago from Milwaukee, was delayed five hours Monday morning by heavy ice just outside of Chicago harbor.

The steamer Tom Adams was towed to the Santa Fe elevator last Thursday, by the tug Van Schaick. The barge J. H. Rutter was towed to the Armour elevator on Goose Island, Tuesday to load, by the tug Protection.

J. J. Rardon has chartered the steamer Tampa for corn to Buffalo at 2⅝ cents. She was towed to South Chicago to load, by tugs of the Dunham Line. The steamer G. F. Williams was also chartered by them for corn to Buffalo at 2½ cents.

J. G. Keith & Co., have chartered the schooner B. W. Parker for 90,000 bushels of corn, the schooner Iron Queen for 84,000 bushels of corn, schooner Iron State for 70,000 bushels of corn, and the steamer Missoula for 90,000 bushels of corn, all for Buffalo at 2½ cents.

The barge Zapotec was towed to the Armour elevator Wednesday,and the barges B. W. Parker to the Armour D elevator Wednesday and the barges B. W. Parker to the Armour elevator at Goose Island and Baltic to the Armour E elevator Thursday to load by I. T. L. tugs.

The following firms who were represented at the Shipmasters' banquet and ball on the 17th inst were inadvertently omitted among those present in my last letter: George C. Finney & Co., shipchandlers, The South Chicago Shipchandlery Co., and J. J. Rardon, vessel agent.

The Vessel Owners' and Masters' Association at this port are making great preparations for their meeting to be held on February 5th. They expect a large attendance, and hope to accomplish much toward their mutual benefit in regard to loading, unloading, towing, etc.

William Meglade, aged 76 years, died Saturday night, Jannary 27, at his residence, 303 Warren Avenue. He retired from the lumber commission business about four years ago, having been in that business in Chicago since 1848. He was widely known and greatly respected for his straightforward business methods and honest dealings. His funeral took place Tuesday at 12 o'clock at noon, at Rose Hill cemetery, and was attended by many of his old friends.

W. J. Connors, of Buffalo, will make an effort to handle freight of the line steamers here by the ton the coming season. He is quoted as having said: "I can see no reason why our Buffalo plan can not be operated here, although it will cost more per ton to handle freight here than in Buffalo. Last season I handled 1,310,149 tons of general freight at Buffalo, employing from 500 to 700 men. Their average wages was between $82 and $83 dollars per month. The men do better work when they are paid by the job. If there is a shirk among them they throw him out. It is a good thing for the men who want to work and a bad thing for the worthless, lazy fellows." Chicago has between 1,200 and 1,500 'longshoremen.

The stocks of grain in Chicago elevators and afloat last Saturday evening were 21,495,000 bushels of wheat, 6,268,000 bushels of corn, 1,033,000 bushels of oats, 235,000 bushels of rye and 129,000 bushels of barley. Total, 29,160,000 bushels of all kinds of grain, against 26,380,000 bushels a year ago. For the same date the secretary of the Chicago Board of Trade states the visible supply of grain in the United States and Canada as 80,264.000 bushels of wheat, 14,406,000 bushels of corn, 4,255.000 bushels of oats, 572,000 bushels of rye, and 2 057,000 bushels of barley. These figures are smaller than the corresponding ones a week ago by 118,000 in wheat and larger by 550,000 in corn. The visible supply of wheat for the corresponding week a year ago decreased 740,000 bushels.

OSWEGO.

Special Correspondence to The Marine Record.

Capt. James Langan, who last season sailed the barge Milk, which foundered off Charlotte last September, has been appointed master of the schooner Thomas L. Parker, of Chicago.

William and John Connell are having a tug built at Buffalo by Grady & Mahan to replace the tug Redford,

which was wrecked here last fall. The new boat will be 70 feet long, 15½ feet beam and 8½ feet depth of hold, and will be brought here as soon as the canal opens in the spring.

Coal trimmers here threaten to strike against a reduction in pay which will, it is said, take effect in the spring. The men have been receiving 2½ cents a net ton, being able to make about $3 per day during the season of navigation. Their wages have now been cut and a trimmer remarked to a reporter here that the dealers had told the men that if they resisted the cut Italians would be put in their places. Instead of being paid by the net ton, they will be paid by the gross ton, and will receive 2½ cents for vessels carrying over 800 tons. For small boats only 2 cents per gross ton will be paid. Formerly they received 12 cents per ton for placing the coal siftings on board vessels. The cut allows them only 8 cents when they wheel it aboard and 6 cents when the siftings are shoveled aboard. The trestle managers claim that only 1½ cents is paid trimmers in Buffalo and that the Oswego people were going to have the work done as cheaply as possible.

ASHTABULA, O.

Special Correspondence to The Marine Record.

Capt. W. F. Burns returned to the Harbor Saturday, after a six weeks' trip and visit in Virginia near Norfolk and vicinity. Capt. Burns will probably pilot the tug Marion again the coming season.

Owing to the heavy sea in the Menominee slip, the tug O. J. True towed the Harbor tugs which were lying in ordinary there, up the river to the Lake Shore slip. The boats had been continually chafing, and had broken a two-inch chain and a large line. The True had the top of her pilot house taken off on the trip by trying to run under the bridge.

Out of fifty nets, which, stretched out on the bottom of the lake cover a distance of over three miles, the tug Neal Dow last Thursday got only two hundred pounds of fish. The nets had been out over two nights and in some of them there was not a single fish. The test of the fishing here was a good one and demonstrates that the fish are at other points in the lake. The Dow made another trial this week, with little better luck, and will probably go to Huron.

Government Inspector Ricketson and Contractor John Stang boarded the tug True Monday afternoon and went out to the Pelican and took soundings. They found the required 33 feet of water over the wreck except at the bow, the bowsprit having been left purposely as a buoy to mark the location of the Pelican until the ore, or what part of it can be recovered, is removed. The soundings demonstrated that Capt. Isabel, the diver, had done his work well and the government will accept the job. While here Mr. Stang will make definite arrangements with Capt. Isabel and his helpers for the removal of the ore. Mr. Stang will furnish the tug scow and all tools necessary for the work and the men will do the work, the receipts from the sale of ore being divided equally between Mr. Stang and the men. The tug True will remain here and the work of removing the ore will be commenced whenever the weather will permit. It is the intention to have three or four divers to work getting the ore up. There is much of the wreckage still on the ore and it will require considerable work to clear it off so that the ore can be reached safely.

COLLINGWOOD, ONT.

Special Correspondence to The Marine Record.

New waling wi l be put on the steamer Algonquin this winter.

Extensive repairs are being made on the steamer Myles at Owen Sound.

Capt. Gil. Pearsall is superintending some changes in the tug Fanny Arnold.

Some important changes are being made in the cabins of the steamer Favorite.

Compound engines are being put in the tugs Queen and Armstrong, at Wiarton, by Messrs. Doty Bros., of Toronto.

The work of lengthening the City of Midland and rebuilding the tug Charlton is rapidly moving along. On the Midland the new part of the hull is nearly completed. The planking is finished and the ceiling is in place, and the promenade deck is on. On the tug Charlton the new portion of the keel is laid and the timbers have been raised.

Nearly seventy men are engaged at the Collingwood Dry Dock. On Block A Mr. Alfred Morrell is building the two tugs contracted for in the fall. Near the edge of the slip, he has the keel of a small tug for Mr. Hector McGinnis, of Meaford, laid. This boat will be thirty feet in length over all, with a beam of twelve feet. Her engines, which are being erected by Messrs. Doty Bros., of Toronto, will be compounded. Directly east of this tug, Mr. Morrill is building a larger craft for Mr. Pratt of Parry Sound. On Monday the work of construction was going on, the timbers being put in place. Mr. Morrill is assisted by Mr. Pratt. This craft will be 95 feet over all, with beam of fourteen and a half feet. She will be strong and stand much knocking and tossing. Her keel is beech, the timbers are tamarack, the fantail will be constructed of white oak, while the planking will be elm from the keel to the water line, and the balance tamarack. As it is intended to use this steamer for the transporting of passengers among the islands around Parry sound, a cabin will be built to conform with the requirements of the passengers. This will be finished in beech and butternut. Messrs. Wilson Bros. are doing the cabin work. The boiler will be of the water tube style, seven feet in diameter, and will supply steam for the compound engines, the dimensions of which are 10x20 inches, with 14 inches of stroke. These will turn a wheel five and one-half feet in diameter. It is expected that the boat will be ready for the opening of navigation.

CLEVELAND, O.

Special Correspondence to The Marine Record.

Mr. Harvey C. Beeson is in the city this week in the interest of Beeson's Inland Marine Guide.

The tug John Gregory is receiving a new wheel at the Cleveland dry dock.

P. H. Fleming, senior member of the firm of P. H. Fleming & Co., insurance agents, Chicago, was in Cleveland Tuesday.

It has been decided to call the second of the Great Northern passenger steamers building at the Globe shipyard the North Land.

Capt. Robert McDowell, who has sailed the Aurora for several years, has been given command of the Selwyn Eddy for next season.

It is reported that gangways will be put into the steamer Aurora, to fit her for carrying package freight, and that hoisting gear similar to that on the George H. Dyer will be put aboard.

Report has it that Mr. Charles H. Tucker, who has so long been agent for the Northern Steamship and other companies here, is to be given an uptown office as Cleveland manager of the line. He is to be succeeded on the dock by Volney D. Tinker.

The firm of Mitchell & Co., vessel brokers, is branching out. They are about to establish a branch office at Ashland. Capt. Alex R. Sinclair, who has been sailing the steamer Simon Laugell, has entered the partnership, and will be stationed at Ashland, doing a general brokerage and insurance business.

The annual meeting of the Richardson Transportation Co. was held on the 24th inst., the old directors, Capt. H. J. Webb, H. C. Ellison, W. C. Richardson, H. D. Goulder, Thomas Jones, F. W. Leek, and John Thompson. The board re-elected H. J. Webb president, H. C. Ellison vice president, and W. C. Richardson secretary, treasurer and manager.

Said a well known shipping man to the New York *Tribune* a few days ago: "The launching of that big passenger steamer at Cleveland will do more to open the eyes of foreigners to the enormous extent of our lake traffic than a whole page of statistics. That a 3,000 ton twin screw, three-funneled steamer should be used on a fresh-water lake for passenger service is in itself a cause of wonder, but that it should be only one of a fleet, and that fleet a large one, is almost too big a thing for them to grasp."

At the Ship Owners' dry dock the south basin is unoccupied. Work is being pushed on the C. B. Lockwood in the north basin and Superintendent Watterson expects to have her out of the dock some time next week. The Lockwood will be considerable of a boat when she comes out, as no money has been stinted in giving her strengthening material wherever it could possibly be put in. After the Lockwood leaves the dock, however, some time will be devoted to repairs to her machinery, which was somewhat damaged by her troubles at the Limekilns last fall.

At the Globe Shipyard, work of placing boilers and machinery in the passenger steamer North West in position is still being pushed. The finishing work is also making rapid progress. The inside of the hull being naturally somewhat dark under existing conditions, wires have been run temporarily to the boat, and the interior is brilliantly illuminated with incandescent lamps, which are not only much safer than lanterns, but enable the men to work faster and better. The keel of the large new freight steamer has been laid down, and work on the tugs is going steadily forward.

There are two inventions for loading soft coal, recently patented, which may come into use next year. One is owned by Walsh, Upstill & Co., coal dealers, and dumps the coal out of the car in a manner similar to the Lindsay hoist, except that the car is not turned over, but empties the coal by turning the car until the side occupies a horizontal position, the coal passing down a jointed chute. Another more recent invention is the invention of Mr. John McIntyre and consists of an immense see-saw arrangement with a high fulcrum. The cars are drawn up a track at an angle of about thirty degrees, into a lock arrangement at the upper end of the "teetering board," which is then let down over the edge of the dock and just over the hatchway, the coal pouring out of the end of the car through a sort of hopper, the "gate" at the end of the car being removed before it is taken upon the machine.

GLADSTONE'S LAKE TRAFFIC.

Special Correspondence to The Marine Record.

The receipts and shipments at the port of Gladstone, for the year 1893 were as follow:

Receipts—Anthracite coal, 55,146 tons; bituminous coal, 209,750 tons; total, 264,896, an increase of 64,667 tons; merchandise, 30,163 tons, an increase of 12,584.

Shipments—Ore, 198,833 gross tons, an increase of 79,940; flour, 1,334,545 barrels, an increase of 195,346 over the previous season.

A SAD DISCOVERY AT BUFFALO.

For a year members of the family of James B. Amos, of Auburn, Mich., have been looking for him. He left home on October 1, 1892, and shipped on the steamer Maine as chief engineer at Bay City. The Maine laid up at Buffalo and Amos wrote from there that if he could secure work he would remain all winter, but in the event of failure he would return home in a short time. That was the last heard from him. A few days since Mrs. Amos called at the coroner's office in Buffalo and looked over the records of unknown dead. She was accompanied by her brother-in-law, Arthur Amos, and they found in an entry dated November 21, 1892, a description of the missing man, who had been run over by a New York Central train and shockingly mangled. The scene which followed the discovery was affecting. Mrs. Amos stated that shortly after her husband disappeared a maiden aunt, Abigail Amos, who lived at Fort Gratiot, died, and made him her sole heir. The estate is valued at $150,000, and is composed chiefly of Detroit real estate. Mrs. Amos secured a certificate from the coroner and started for Detroit, where she will enter a claim for the property.

FLOTSAM, JETSAM AND LAGAN.

The French launched the first vessel built entirely of aluminum.

Among the many important results of the World's Fair will probably be the formation of an International Scientific Exchange for the prompt interchange of scientific information.

It is hinted that at the next session of the Canadian Parliament it will be asked to increase the subvention for a proposed line of fast Atlantic steamers to $750,000. This would make an increase of $250,000 over the present annual subsidy statute.

The Bureau of Navigation, Treasury Department, is informed through the Department of State that the Government of Hayti proposes to adopt extreme measures in the cases of small whalers and other American vessels putting in to closed ports of Hayti and presumably carrying on contraband trade.

Where a policy of marine insurance is canceled by mutual consent on the return of the unearned premium, and neither party knew at the time that the insured steamer had been lost, the cancelation is voidable, as made in ignorance of a material fact, and the insured is entitled to recover the amount of the policy, less the returned premium.

A dispatch from Ishpeming, Mich., under date of Jan. 20, says: "Figures giving the total output of iron ore for 1893 have been received from every mine in the Lake Superior region. The amount is 6,046,208 gross tons, which is 3,023,348 less than sent out in 1892. The product was furnished by the different ranges as follows: Marquette, 1,818,941; Menominee, 1,460,646; Gogebic, 1,328,116; Vermilion, 817,458; Mesaba, 621,047."

Reports from the Clyde's thirty-five shipbuilding firms show a decrease in the output, compared with last year an amount equal to sixteen per cent.; that of the Tyne and the Wear something over thirty-five per cent. The outlook for 1894 is very poor. Difficulty has been experienced by Great Britain's ship-builders in securing orders at any price and it is said they have passed through the worst times ever known in the trade.

Returns of the shipping of the Canadian Dominion show a lamentable decrease both in vessels and tonnage during recent years. In each province the shipbuilding industry is declining. During the last ten years the total tonnage has decreased about one-third of the total or by 320,895 tons from 890,810 tons in 1884 to 569,915 in 1893. In the first named year Nova Scotia had 8,019 vessels, of a total tonnage of 543,835, while she now has only 2,717, with a tonnage of 394,861; New Brunswick owned 1,096 vessels, with a tonnage of 307,762, now she has 1,011 vessels, with a tonnage of but 156,645. Prince Edward Island possessed 234 vessels, with a tonnage of 39,213, now she has 188, with a tonnage of 19,409.

HISTORY OF THE SAULT CANAL.

The first attempt to overcome the natural obstruction to navigation was in the form of a portage around the Sault Ste. Marie rapids. At the Sault the level of the river is lowered eighteen feet in about a mile; for the remainder of the distance the fall is slight, the only difficulty of navigation being found in the crooked and rocky channel. For years the portage was the only means of passing the rapids. Occasionally a small vessel was hauled up on wooden ways and landed in Superior. After repeated failures to interest the general government, the State of Michigan built a canal and lock in the '50s, and after the war a new lock of larger capacity was constructed. This lock, completed more than ten years ago, was found too small for the demand of trade. It is 515 feet long and 60 feet wide, and will admit three or four vessels of the class drawing about fifteen feet, but it is frequently the case that scores of boats are waiting at the lock for passage at the same time. To prepare for the growing commerce, the government began preparations for another lock very soon after the present one was opened. The plan was generous. Though it had just completed the largest lock in the world, the United States government decided to make the new one almost twice as large. This fact should be remembered when one feels inclined to jeer at the slow progress of the construction. Seven or eight years seems a long time in which to complete a structure not more than 1,000 feet long, but it must be remembered that the undertaking was absolutely without precedent, and that every part of the great work was planned and carried out with the utmost nicety and minute attention in detail. An example of the great care taken in planning is found in the specifications submitted to contractors. These were accompanied by drawings showing the exact size and shape of every cut or dressed stone to be used in the vast lock—there are about 14,000. Of course, many of them are exactly alike, but, nevertheless, there were some 400 distinct styles. Every one of these 14,000 stones, some of them weighing many tons, were numbered in the drawings. In addition, the contractors had zinc models of every stone. In this way the masonry was put together like the parts of a watch; the different parts prepared in various places, but with such accuracy that every stone fitted its place without a hair's breadth of variation. Even a non-professional cannot help admiring the beauty and finish of these walls. The work was pronounced by visiting foreign engineers last summer the finest in the whole world.

With the close of the season of 1893 the masonry is practically completed. When the works were visited a few days ago the coping stones were being placed in position and the finishing touches were being put on. This part of the work has been executed by Hughes Bros. & Bangs, of Syracuse, N. Y., who, by the way, have lately taken the contract for building the great harbor of refuge at Point Judith, Mass., one of the most stupendous of recent government undertakings. Mr. Hughes, who is in personal charge of the work at the Sault, takes more than ordinary pride in the execution of his contract. It was one which called for the exercise of almost unlimited ingenuity and the solution of many problems entirely new.

The new lock was erected on the site of the old state lock and about a hundred feet from the present lock, being that much nearer the river. As it now stands it presents the appearance of a vast dry dock. The walls of masonry rise 100 feet apart to a height of about 60 feet and stretch along for nearly a quarter of a mile. The great opening between them is still cluttered with the refuse of construction, and the tracks upon which the movable derricks and the supply cars have been operated.

The main idea impressed upon the layman is vast strength accompanied by wonderful care in every detail.

Of the work on the lock proper there remains to be executed the floor and the gates. The former is much more of a consideration than might be supposed. It involves the construction of a series of canals or culverts under the lock through which the water is admitted to raise the vessels. These culverts extend the entire length of the lock and have frequent openings through the floor. The old fashioned and still common means of filling a lock was by direct admission of water from the upper end. Unless that is done so gradually as to take a great deal of time, the inrushing water is liable to injure the vessels by jostling them against each other or the sides of the lock. By admitting the water from below and in all parts of the lock, all danger is avoided and the boats rise rapidly over the gentle ebulition which is apparent on the surface. The present lock is the first which was constructed on this principle, and the new one is to be substantially the same, but with more and larger culverts, so that while the smaller lock requires twelves minutes for filling, the larger is expected to operate in about two-thirds of the time.

The gates also required much thought on the part of the government engineers. Here, again, there was, of course, no precedent. Overwise critics shook their heads and said that lock gates 56 feet long and 45 feet deep could not be constructed and operated. Right at this point the engineers branched out and planned something original. They will build the gates of steel to secure the proper strength and will insert air chambers to overcome the objection of weight; in other words, the gates will be provided for safety and use in case of accident. Like the gates in the old lock, they will be operated by water power. There are five sets, the extra gates being partly afloat, there being enough confined air to relieve the hinges of nearly all the weight. These gates will cost $180,000.

The floor and gates will be finished next summer. Until the gates are done and hung in position, it is, of course, impossible to remove the cofferdam which protects the lock, so that after the completion of the gates the cofferdam must be dredged away and the walled approaches to the lock built. It thus appears that the benefits to navigation to be secured by Uncle Sam's $5,000,000 expended for a lock will not be enjoyed until some time durtng the season of 1895. In the meantime the canal above the lock is being deepened to correspond with the increased depth of the lock, and the new Hay Lake channel, which shortens St. Mary's river by eleven miles, is being pushed to completion and will be ready early in the summer of 1894. This work is under the general charge of Gen. O. M. Poe, of the United States engineer corps, with headquarters at Detroit, but it is under the immediate supervision and control of Col. E. S. Wheeler, who is a veteran engineer and an admirable man for this important work.

A ride across the great international bridge at the head of St. Mary's rapids, a more exciting trip on a wobbling little ferry boat through the eddys at the foot of the rushing water, brings the visitor to the rival hydraulic undertaking on the Canadian side of the Sault. The Canadians are working very much faster than their Yankee cousins. Though surveyed in 1852, and talked about ever since, no actual work was done until 1887, and then it progressed very slowly until the late exchange of courtesies in connection with the subject of the passage of United States vessels through the Welland canal. The intimation of retaliatory measures on the part of the United States at the Sault is generally understood to have been the cause of the tremendous activity in the works during the past season.

To understand the extent of the feat of construction which has been achieved in the Canadian works it must be remembered that every part of the great lock and canal had to be done from the beginning; there was no old excavation to use as on the American side, and no old lock to facilitate construction. A mile of rock excavation took the place of a simple deepening of the canal on the American side. As was the case on the American side the vastness of the work and its peculiarity, required the design of special machinery and new methods of operation. Preparations required a great deal of time. The contractors, Messrs. Ryan and Haney, have had large experience in handling men and material and it is due to their ingenious plan for supplying material to their workmen that they have been enabled to practically build a lock 1,106 feet long in one season. Only a few courses of masonry were laid in 1892. The coping was being put on a few days ago.

In the general plan the lock is similar to those on the opposite side of the river. It operates on the same general principle, but is longer and narrower than the new American lock. The cost will probably be much greater; $6,000,000 is the rough estimate, but no one seems to know what the total will amount to. The work is in charge of William Crawford, one of the foremost of Canadian engineers. At the outset it was planned to make the depth over sills sufficient to allow the passage of vessels drawing eighteen feet, but the Canadians concluded not to make the same mistake which they did in the Welland canal and changed the depth to twenty-one feet—the same as the new American lock. Above the lock a vast amount of excavation is being done and will be continued all winter. The approaches have already been dredged, so there seems no reason why the Canadians should not, as they expect, celebrate Uncle Sam's next Fourth of July by opening their Soo canal. As the other improvements on the St. Mary river will be completed by that time the large lake vessels will be able to pass from Lake Huron to Lake Michigan with full loads—if Canada will let them. The Canadian policy regarding the new canal and future action on the Welland matter are not announced, but it is certain that by next July Canada will be in a position to dictate such terms as she may please.—*Duluth News-Tribune.*

INSPECTOR CONGER'S WORK.

The following appears in the Review for November of the United States Weather Bureau:

Mr. N. B. Conger, Inspector, in charge of the Lake Marine Section, in his monthly report for November states that out of 2,000 bottles that have been floated in the different lakes comparatively few have, thus far, been picked up and returned. Out of 800 floated in Lake Superior, this season only 34 have, as yet, been picked up. The general results of this work as to the movements of the water will soon be presented in a special bulletin by the Chief of the Bureau. Thirteen stations for the display of storm signals have been established at places where they will be of great benefit to the navigators. The total losses of vessels and lives on the lakes during this season have been 53 vessels and 123 lives; aggregate tonnage 24,258 and aggregate value $1,040,400. Nearly half of this loss was on Lake Erie. The largest single loss has been the collision on Lake Huron of the steamers Philadelphia and Albany in the fog of November 7, ten miles from the life saving station. The cause of the great number of accidents has been the prevalence of fog, due to the vapor from the warm lake surface.

A LESSON FROM THE DOMINION.

While the citizens of the United States are interested in the discussion of a proposed law, the object of which is to curtail our home manufacturers, the statements made by a prominent iron producer in Canada may not be without interest. At a meeting of the Quebec Mining Association, held in Montreal a few days since, Mr. G. G. Drummond, president of the Canada Iron Furnace Co., read a paper on the Canadian iron industry. He showed what virtual protection had done for that industry and stated that under the encouragement afforded by the Dominion government it has shown an increase in the last two years of 100 per cent. and that Canadian pig iron had made a place for itself in the home market and was gradually displacing the product of British and American furnaces. He stated that the iron industry of Canada is now in a critical stage; and any reduction in the current protective duties, which some were asking of the government; would, if acceded to, surely prevent further progress if it did not entirely annihilate the industry, by exposing it to the hostile competition of foreign producers. In arguing that the interests of the agricultural population would be best served by the encouragement of the iron industry, he stated that all but one of the Canadian blast furnaces were located in rural districts. The coke furnaces of Nova Scotia drew a large proportion of their employes at their mines and furnaces from the farming class. In many instances farmers took work in the mines. The charcoal iron furnace especially was the farmers' industry. In the case of the Canada Iron Furnace Co., at Radnor Forges, out of a staff of 850 men employed at the present time, 700 at least were farmers or habitants who worked for the company during the winter months and at their slack seasons. The same was the case at other points.

LITERARY NOTICES.

"The Man-that-draws-the-Handcart" is the curious title of an article by Dr. Edward Eggleston in *Harper's Magazine* for February. The name was originally given by the Indians of the Northwest to George Northrup, a famous scout and hunter. Dr. Eggleston in the article pays an interesting tribute to a well-nigh forgotten hero.

In *Harpers' Young People* for January 23d there are delightful stories and sketches in plenty, while an article on "Light Bent Iron Work" furnishes some very helpful ideas to boys possessed of any ingenuity. An illustrated study of "Flying Machines" gives the latest progress in the art of flying, particularly noting the advances made by a German inventor, who has himself "flown" 250 yards from a tower, alighting in safety at the end of his flight.

The *Overland Monthly* for February is devoted chiefly to the history of the Northwest. It opens with a group of poems about places in Oregon and Washington, showing the beginning in the Northwest of that same, disposition to poetic patriotism which is so marked in California. "Northern Seaside Resorts," is the title of the leading descriptive article, and the number contains an able paper on the immigration question from the pen of John Chetwood, Jr.

The "Old Sailor's Yarns," which Mr. W. J. Henderson has from time to time contributed to *Harpers' Young People* have created quite an amount of interest among the young readers of that bright paper. There is a quiet and dry humor about them, and under cover of the fun and absurdity of the plot, very good lessons accompany them. A recent number contains one of these stories called "The Divided Sea Serpent," which is full of quaint and amusing ideas.

The "Nickel Plate Headlight" is the name of a newsy little magazine issued in the interests of the New York, Chicago & St. Louis railroad this year by Mr. A. J. Horner, head of the Nickel Plate advertising department, and Mr. W. H. White. Particulars of interest to passengers are interspersed with bright sketches, and the title page is a handsome engraving of an approaching locomotive. It is furnished free by agents and sent to any address on receipt of twelve cents to pay postage.

MARITIME LAW.

J. C. HAWKINS (Schooner Monette) v. SCHOONER VIOLA.

District Court S. D. New York.

COLLISION. Application of the Harter law, enacted February 13, 1893, (27 Stat. at L., Ch. 105, page 445), in reference to claim for damage.

Supplemental opinion by Judge Brown.

The answer alleges that the Viola at the time of the collision was engaged in transporting merchandise from ports in Canada to New York; and that her owners had exercised due diligence to make her in all respects seaworthy and properly manned, equipped and supplied. Evidence was given to that effect. Those facts are not denied by the libelant. The defendant contends that the words of the first clause of the third section above quoted are to be applied generally as respects all claims against the vessel or owner arising from faults of navigation, including claims such as this for damages to other vessels and their cargoes through collision, as well as against claims for damage to cargo on board the vessel in fault.

This construction would probably annul nine-tenths of all the responsibilities of carriers by sea. It would involve a change in the law of shipping so radical and so wide-sweeping in its consequences that I cannot believe it was the intention of Congress to enact a change so revolutionary in the incidental matter, and in the connection in which this clause appears in this act. Taken as a whole, the act appears to be dealing with the rights, relations and remedies between ships and owners transporting merchandise, and the cargo on board. * * * Upon maxims of construction (just quoted by the court) the general words of Section 3 should be limited to the subject of the act as shown by the words that precede and follow the clause in question, viz., the mutual rights and obligations between the carrier, the carrying vessel and the goods carried. The third section is, moreover, expressly confined to "vessels transporting merchandise," thus apparently excluding tugs, passenger vessels, and possible vessels in ballast. Had the statute designed a change in the general principle of maritime responsibility, such an exclusion would not have been probable. The same view is to some extent further confirmed by the saving clause of the sixth section of the act, which provides, "that this act shall not be held to modify or repeal * * * section 4283 of the Revised Statutes (limiting the whole liability of the shipowner to the value of his interest in the ship and the pending freight), or any other statute defining the liability of vessels."

There can be no doubt that by section 3 the act intended to absolve the vessel and the owner from the claims of the cargo on board arising out of faults of navigation, under the conditions stated. Its plain language requires at least that much.

The fact that the L. Monette may not be liable for the damage to her own cargo, partly through her faulty navigation, does not affect her right to recover against the Viola for that damage; since the Monette remains bailee of the cargo, and responsible as such for its proper care and delivery. A similar oral ruling upon the construction of this statute has been made by Judge Carpenter in the District of Rhode Island, upon the hearing of exceptions to the libel. Decree accordingly.

Dated New York, January 16th, 1894.

INLAND & SEABOARD COASTING CO. v. THE GULF STREAM.

District Court, S. D. New York. October 25, 1893.

COLLISION—MUTUAL FAULT—AGENT'S PURCHASE OF DAMAGE CLAIMS AT A DISCOUNT—ALLOWED FOR AMOUNT PAID ONLY. Where one of the parties before the court in a cause of collision, or his agent, purchases at a discount damage claims for injuries to cargo, and both parties are afterwards held to be in fault, the purchased claims will not be allowed in the subsequent assessment of damages for more than the amount paid, with interest. Neither party in fault can make a profit out of the other by the purchase of such claims at a discount. Such a purchase by the ship's agents is, in effect, a purchase by the owner, as their principal.

In admiralty. Exceptions to commissioner's report.

Brown, district judge. The above libel was filed to recover damages to the E. C. Knight and her cargo through collision with the Gulf Stream, whereby the Knight and her cargo became a total loss. Both vessels were found in fault. 43 Fed. Rep. 895. Upon a reference to compute the damages, the value of the Knight was fixed at $10,000.

A further claim of damages to the amount of $3,270 was allowed, besides interest, for the value of 765 barrels of flour on board the Knight belonging to Whittemore & Sons, who were paid that amount by the Atlantic Mutual Insurance Co., as insurers of the flour, on October 25, 1887, and who assigned all their claim for the damages to the insurance company. On March 20, 1890, this claim was purchased from the insurance company by B. F. Clyde, and assigned to him for $1,000. One-half of another claim of $500 for the value of certain furniture shipped on board the Knight by one Trimble, was assigned by him to William B. Clyde & Co. for $150.

William B. Clyde & Co. were the general agents of the owners of the Gulf Stream, and B. F. Clyde was a member of that firm. All the above assignments were made after the libel was filed—the two latter, long after the cause was at issue and after the owners of the two vessels were before the court.

The claim in the libel being for the loss of the cargo, as well as of the ship, it was agreed, by stipulation between the parties, that B. F. Clyde and William B. Clyde & Co. should be treated as intervening for their interest. By this I understand that their claims are to be dealt with in the same manner as if they had sought payment of the assigned claims from both vessels found at fault. The respondent's proctors contend that Clyde and Clyde & Co. are entitled to recover the full amount of the assigned claims with interest; the libelant contends that they are entitled to recover only what they paid, with interest.

1. As the Knight was a total loss, no recovery can be had by Clyde, or Clyde & Co., directly against her; but as the Gulf Stream is directly answerable for the whole loss of cargo, the one-half of whatever sum the Gulf Stream has paid, or may be liable to pay on account of cargo, should be offset against the amount decreed to the owners of the Knight against the Gulf Stream for the loss of the Knight. B. F. Clyde and Clyde & Co. have not, in this suit at least, any direct claim against the Knight or her owners; it is only the Gulf Stream that, by way of recoupment, can offset against the amount payable to the libelant the one-half of what the Gulf Stream must pay for cargo upon the assigned claims. But Clyde & Co., and B. F. Clyde as a member of that firm, being the general agents of the Gulf Stream and her owners, stand in a fiduciary relation to them, and can make no profit by the purchase of claims against them.

2. The value of the Knight at the time of the loss was the subject of a remarkable conflict in the testimony. Considering, however, the age of the vessel, her antique model, the little call for such vessels ever since this collision, and the small earning capacity of her consort, as well as the conflict in the direct testimony as to her value, I think that $8,000 will be a sufficient allowance for the Knight at the time of the loss. The other exceptions are overruled.

PORTAGE LAKE CANALS.

Major G. A. Marr, in charge of the government work at the Portage Lake canals, submits interesting statistics of traffic for last season. There was in 1893 a decrease in the number of vessels passing the canals as compared with 1892, but an increase in the tons of cargo carried. In 1893 1,408 vessels of a net tonnage of 664,510 tons carried 532,628 tons of cargo, as against 496,288 tons of cargo carried by 1,470 vessels of a net tonnage of 665,053 tons in 1892. This shows that the improvements in the canals have resulted in a sensible increase in the size of cargoes carried. The canals need considerable repairs, and if Congress will but make a proper appropriation Major Marr will soon have them in such shape that no further large expenditure will be needed for some time and more vessels with still larger cargoes will be able to pass. The following table is condensed from the several tables furnished by Major Marr:

PASSED PORTAGE LAKE CANALS.

1893.	Up.	Down.	Totals.
Vessels	868	510	1,408
Tonnage	435,196	234,314	669,510
Passengers	14,592	12,492	27,084
FREIGHTS.			
Coal, tons	254,705	.....	254,705
Copper, tons	9,864	54,548	64,412
Iron ore, tons	.....	400	400
Manufactured iron, tons	8,946	.....	8,946
Pig iron, tons	.....	3,189	3,189
Limestone, tons	9,356	.....	9,356
Building stone, tons	.....	1,180	1,180
Grain, bushels	34,264	4,000	38,264
Flour, barrels	125	215,463	215,548
Salt, barrels	23,985	.....	23,985
Lumber, Ms	.....	42,863	42,863
Miscellaneous, tons	71,836	11,336	93,172

LAKE LITIGATION.

Judge Swan is engaged in a hearing of the libel of the Mitchell Transportation Co., of Hampden, Mich., against the steamer Susan E. Peck, of Buffalo. The cause grows out of the collision between the Peck and the barge Nelson in the Limekiln Crossing on the morning of November 20, 1892. The Nelson was bound down with a cargo of 50,000 bushels of wheat, in tow of the propeller A. Folsom. The Peck was coming up at full speed loaded with coal and passed the propeller and the Mary B. Mitchell; the first barge in the Folsom's tow, all right, but after passing the Mitchell, the libelants claim she sheered and struck the Nelson on the port bow near the port bow rigging. The barge sank in twenty feet of water a little below Bois Blanc Island. The amount of damages sued for is $47,800. The Peck people claim that they were faultless; that the tow was allowed to work over toward the Canadian shore, and crowded the Peck over to the bank. When a collision seemed imminent they declare they reversed, but that the Nelson made no effort to avoid them until too late. Shaw & Wright, of Detroit, are the proctors for the libelants, and Harvey D. Goulder; of Cleveland, and Frank H. Canfield, of Detroit, for the respondents.

The schooner Danforth, which sank in one of the disastrous storms last summer, has been recently resurrected in the Detroit law courts. An action for damages was entered by the owners against the Runnells Tug Co., of Port Huron, for injuries to the extent of some four or five hundred dollars, sustained by the schooner some eighteen months ago while the D. N. Runnels, one of the company's tugs, was towing her into the Grand Trunk elevator at Point Edward. The case was settled out of court last week by the Runnels Co. making reasonable compensation to the owners of the Danforth.

AN OCEAN WHALEBACK LINE.

Within a few months a line of steamships will be run between the United States and Central America, which, it is said, will revolutionize transportation between the two countries. To carry out this project a company has been formed under the name of Uncle Sam's Whaleback Transportation Co. It has a capital stock of $1,000,000, and is incorporated under the laws of Illinois, with Richard D. Mallett of Duluth, John C. Lise and George H. Stewart as incorporators.

The object of the company is to afford rapid facilities for conveying the products of the republic of Guatemala, Spanish Honduras, Nicaragua and Costa Rica to the United States, and also to export from this country such products as may be desired by Central American.

It is the intention of those interested to build two whaleback steamers which will be adapted to both freight and passenger service. They will be constructed at West Superior, by the American Steel Barge Co. Besides the two steamers a flyer will be built for going in advance of the whalebacks. The capacity of the two boats will be 400 tons in six feet of water and 1,300 tons in deep water, which will equal 16,000 bunches of fruit. The route will be from New York, Mobile, New Orleans, or Atlanta along the coast of Central America between the United States of Columbia and Mexico. All kinds of native fruit will be brought to the United States, including cacao, pineapples and bananas. The interior of the country will be traversed by the whalebacks by means of the various rivers, one of the most important of which is the Rio Dulce, which extends inland a distance of 100 miles. The river extends to the mouth of the Rio Polachic. Here is situated the City of Coban, where immense coffee plantations are laid out. The United States does not get any of this coffee at present, the bulk of it being sent to England.

The distance by the whaleback route is between 800 to 1,000 miles, and the trip, from the time the fruit is picked until it is delivered in this country will take five days. The company is an American company. It runs American ships, commanded by American sailors, and backed by American energy.

HOW THE WATER IS KEPT OUT.

In building the new canal at Sault Ste. Marie, Mich., a cofferdam of timber crib-work filled with clay was constructed the length of the canal to keep out the water from the site where the work was in progress. The clay in this dam was continually wearing out through the timber and it was necessary to replace it, an operation performed by stock ramming, a somewhat unusual process in this country, though a favorite one with English engineers. The work is begun by driving an inch pipe to the bottom of the clay filling in the cofferdam. An iron rod 30 feet long slides up and down in this pipe and over it is an ordinary pile-driving apparatus with a hammer weighing over 1,900 pounds. This hammer is used to force down the tube cylinders of clay obtained with shovels of which the blades have been cut and then rolled into a ring a little less than 3 inches in diameter. These shovels are pushed into a mass of moistened clay and form little rolls about a foot long, which are placed in the tube by hand. About a third of a cubic yard is forced down the tube by the rammer and pile-driver. The pipe is then pulled up about 10 feet and another third of a yard driven down, after which the pipe is again pulled up 10 feet and still another third of a yard driven, making a cubic yard of clay which has been forced into the filling of the dam at this spot. The whole apparatus is then moved forward five feet and the process repeated. In this way the ramming is continued back and forth over the top of the cofferdam during the entire working season and keeps the interior fairly water-tight.

The Marine Record,

ESTABLISHED 1878.

Published every Thursday, at 144 Superior Street (Leader Building,) CLEVELAND, O.

IRVING B. SMITH. }
CAPT. JOHN SWAINSON. } - - - Proprietors

BRANCH OFFICE.

CHICAGO. ILL., - - - 35 Franklin St.

THOMAS WILLIAMS, Associate Editor.

SUBSCRIPTION.

One copy, one year, postage paid, - - - - - - $2 00
One copy, one year, to foreign countries, - - - $3 00

Invariably in advance.

ADVERTISING.

Rates given on application.

Entered at Cleveland Post Office as Second-class Mail Matter.

CLEVELAND, O., FEBRUARY 1, 1894.

F. W. WHEELER & Co, of West Bay City, are figuring on a contract for steel vessels to go to the Atlantic coast, but matters have not yet advanced sufficiently to warrant publication of details. If such an order is secured it will somewhat improve the outlook, and will add materially to the construction figures of 1894.

THE management of the Pittsburg, Shenango & Lake Erie continue to cherish the project of running a barge line, carrying coal in cars, from Conneaut to Port Dover. The Shenango is actively in the market for the delivery of coal to Canadian roads and will probably have a good representation at the letting of the Grand Trunk fuel contract, which is to be awarded in a few days.

LATE advices are to the effect that the Milwaukee Tug Boat Co. has been awarded a contract to caary 50,000 tons of Pewabic ore from Escanaba to Ohio ports at 70 cents per ton. This is considered to be a fair contract price for the first half of next season. The output of the Pewabic mines last year was a little less than 500,000 tons. Carnegie is said to have bought all the output of the mine for this year.

THE Duluth and Superior River and Harbor Commission have prepared an interesting pamphlet giving facts and figures about the harbor at the head of Lake Superior and setting forth its present needs. This pamphlet will be distributed among Congressmen and other men of influence, and will ably assist, no doubt, the urgent measures now being taken to secure a liberal appropriation for that harbor.

WHILE more a result of circumstances, perhaps, than of politics, it has been none the less necessary for each of the ports along the lakes to keep a more than watchful eye upon the present Congress, in order that even hope of an appropriation might be given. Congress finds it necessary to retrench extensively this year, and the river and harbor bill must suffer with the rest of the appropriations.

CAPT. ALEX. MCDOUGALL appears to be pushing his man-of-war scheme. A recent Washington dispatch states that at the Navy Department a western ship builder had presented a plan to utilize vessels of the whaleback type in the navy. The name of the gentleman was not given out by the Navy Department, though why it was kept "secret" can hardly be explained, since there are not two men in a position to make such a proposal. This "western builder" wishes the Navy Department to convert a few of his steamers into this class of naval ships as an experiment, and if they promise to be successful, others might easily be turned into auxiliary cruisers with the same readiness as were the merchant ships recently fitted out at New York for the Brazilian navy.

THE interest which is being taken in the proposition to revive the old inter-lake yachting association is encouraging, and indicative of the increasing interest which is being taken in this class of sport. The project should commend itself to everybody interested in the advancement of the United States Navy, and the country's merchant marine. There is no sport which so directly fits and educates boys for vocations which in the years to come will be more and more recognized as essential. While the boys are awaiting this much hoped-for period, they are at the same time gaining experience of every-day practical value. A yachtsman must give his craft a larger part of the time he can spare from his business, but this teaches the lessons of application and perseverance. A yachtsman becomes a practical seaman almost before he knows it, and many of them have shown so much sagacity and intelligence in relation to matters of technical navigation that did not their lives fall in slightly different channels, they might, ere long, be in position to take responsible berths on large ships.

THE FIRST AMERICAN STEEL SAILING SHIP.

At the yard of Arthur Sewell & Co., Bath, Maine, the first steel sailing ship built in American is about ready for launching. The vessels principal dimensions are: Length over all, 330 feet; length between perpendiculars, 310 feet; beam, 45 feet; depth, 27 feet 3 inches, designed to carry 4,500 tons dead-weight on 22 feet 6 inches draught and to stand without ballast when light in port. She has a flush main deck of steel fore and aft, the whole of which is sheathed with 3¾ inch hard pine planking. The lower deck has steel stringers and tie plates, and is planked with 2-inch hard pine. A lofty topgallant forecastle with lamp-room and store-rooms at sides is fitted forward. There are two commodious steel deck houses, the forward and larger one of which contains comfortable quarters for the crew, also galley, and the donkey engine which works the windlass and pumps by messenger chains. The smaller deck house aft is fitted up for the accommodation of all the apprentices and petty officers, also containing the carpenter shop. There is a large full poop aft, in which is the captain's accommodation, and a nicely furnished saloon 16 feet square, on the starboard side. The mess room and pantry is in the center, whilst the officers' cabin and two spare state rooms are fitted on the port side; the sail room occupying the space right aft. On the top of the poop is a steel chart house, which also forms a cabin entrance. The vessel is to be steered by the Waddington screw steering gear, the wheelsman being protected by a steel hood open on the forward end. A large flying bridge is fitted, connecting the poop and topgallant forecastle, and this will undoubtedly prove a great convenience in bad weather. The scantlings of the vessel are equal to Lloyds, though she is not classed or built under their survey, but will probably be classed by the Bureau Veritas and the American Ship Masters' Association. The vessel is to be rigged as a four-masted ship, being square rigged on three masts. The lower masts and topmasts all being in one length, the pole bowsprit 67 feet long, the lower yards 92 feet long, the upper and lower topsail yards are all of steel. She will carry single topgallant sails, has skysails on the three masts and will spread about 13,000 yards of canvas. A large crane is fitted on each side of the bow for working the anchors. In the early spring she will be fitted for sea and enter the California trade. Though costing a little more than a wooden hull the advantage which steel vessels always have over wooden ones in commanding freights is expected to make her as profitable as her big predecessors, Roanoke, Susquehanna and Shenandoah. The steel plates and angles used in the construction of this vessel were imported from David Colville & Sons, of Motherwell, near Glasgow, the British tramp steamer Buckingham having been chartered by A. Sewall & Co., for their transportation. J. F. Waddington, designer of the new ship and the ex-superintendent of the Sewall steel shipbuilding plant, served his apprenticeship with Harland & Wolff, of Belfast, Ireland, and built about 30 vessels whilst in business for himself near Liverpool, England. Previous to going to Bath he was with the Union Iron Works at San Francisco. Whilst with the Sewall firm Mr. Waddington also prepared the designs for another large steel sailing vessel, which will be commenced on as soon as the present one is completed and ready for sea.

AN INEVITABLE RESULT.

To the Editor of The Marine Record:

I again beg to thank you for your support in aiding me to show up the folly of the Free Ship Bill. I have at hand a letter from Mr. C. B. Orcutt, president of the Newport News Ship Building Co. He is fighting against the free admission of marine machinery as proposed by the Wilson bill. This is the first blow of the axe which will shatter our ship yards. Mr. Orcutt says: "It seems to me a wail of large proportions should come up from lake ship yards principals and men alike, at this iniquitous measure which aims a death blow at American enterprise and seeks to reduce labor to the pauper standards of foreign countries. Shall we fold our hands complacently and see this done?"

There seems to be a strange apathy among out lake ship-builders, in regard to this bill; but perhaps they realize the uselessness of arguing with men who show so little wisdom in the affairs of government; but so sure as the Free Ship bill becomes a law, free ships will find their way into the coastwise and lake trades.

Detroit, Jan. 27. RICHARD P. JOY.

IS IT CAUSED BY VOLCANIC ACTION?

To the Editor of The Marine Record:

Having been requested by several lake captains and others interested to express my theory or opinions, resulting from practical observation of the cause of the current in different directions, and the rise and fall of water in the lakes at short intervals, together with what I have heard some call the "tidal wave" on Lake Superior.

I notice in THE RECORD of January 11 an article relative to pilot charts issued by the government for the northern Pacific Coast with great improvements.

It is very interesting to me to notice the trouble and expense, as well as the great interest, the government takes to support, promote and benefit navigation.

Some time ago I was presented with a current chart of the Great Lakes (from last year's investigation) by Mr. Patrick, the officer in charge of the weather bureau at this port, and I think it is a very good thing as far as it goes; but there is something else I would like to see the government, together with the masters navigating the Great Lakes do, and that is to make a scientific investigation of what I claim is the greatest cause of the so-called tides, and that is a volcanic motion from the bottom of the lakes, especially Lake Superior. This is, in my opinion, the cause of the different currents which at one time set one way and other times the other, as well as being the direct cause of the rise and fall of the water in the lake.

When I first went to Duluth from the ocean, in the year 1869 or 1870, a breakwater was under construction to form a protection to the harbor at that place, on which some one had placed a box with a floating rod to indicate the rise and fall of the water, or as some called it, the tide. After watching the indications given by the rod closely, I made up my mind that the fluctuation was caused by some volcanic motion, from experience I had in the Mediterranean Sea and other ports in the vicinity of volcanic eruptions.

This theory proved itself to my mind afterwards to be correct, by an earthquake which was distinctly felt all over this point and caused women and children to flee from the houses. I have at Huron Bay and other places on Lake Superior sat for hours with watch in hand on flat rocky shores to notice the rise and fall of the water and at no time would it come to the same height; it was at all times irregular, as well in rise and fall as in time.

I think it was in 1872 that I noticed the water rise between 2½ and 3 feet in Duluth, and on Isle Royale 3 feet. This was observed by Capt. S. W. Hill and party and according to newspaper account it raised 2½ feet at Sault Ste. Marie on the same dates. Here are the two extreme ends of Lake Superior and also the middle rising bodily up and subsiding in the short space of say one-half hour or more. What is the cause of this if not volcanic action? I should very much like an expression of opinion from some scientific parties.

Last summer in conversation with Capt. Ed. Mooney, of the Wawatam, on this subject, he informed me that he had experienced heavy waves on Lake Superior on one of his trips, and that other vessels in close proximity to him felt nothing of them, and there may be many others that have similar experience if the matter were only investigated.

No one will deny the fact that there is a natural current on all the Great Lakes tending generally towards the ocean, as shown by the chart, except at Apostle Islands, Lake Superior. I notice a division on the chart at that point, one going down the lake, the other going toward Duluth; this doesn't look natural and there must be a reason for it.

At Portage Lake or Entry (Keweenaw Bay) and ship canal, I have seen the current take buoys under water when the tide (so-called) was running in, and in half an hour or less the water would be running out at the same speed, coming in at each end of the canal and entry, and going out in the same way, and I would very much like to see the government give more attention to this investigation of the rise and fall of the Great Lakes, as it might result in some valuable information on the subject and be of great service to navigators and others in interest.

Respectfully yours,

A. O. TRUGER.

Marquette, Mich., January 24.

A FRACTIONAL ERROR.

To the Editor of The Marine Record:

Since writing you on the 22d, as to the planking of No. 118, I have re-figured same and in place of 16 feet 5 inches less 111-1000 inch, or scant ⅛, please substitute 16 feet 5 inches less 055-1000 inch, or 1-20 inch.

Yours truly, F. A. KIRBY.

Wyandotte, Mich., January 27.

THE Volunteer, Florence and Commonwealth are the only non-Bessemer mines now working in the Lake Superior district, and these are operated more as a matter of charity than in the hope of profit to the stockholders.

MASTERS' AND PILOTS' ANNUAL MEETING.

The seventh annual meeting of the Grand Harbor American Association of Masters and Pilots of Steam Vessels of the United States, convened January 18th, at Elks' hall, Washington, the session continuing all week. The session opening with the appointment of the various committees for the meeting. Resolutions of condolence were passed on account of the death of E. A. Brooks, of New York, late grand chaplain of the order. Resolutions were also passed requestlng the Secretary of War to compel the opening of bridges over the Harlem river at New York, at all times during the day, for navigation. A special committee was appointed to wait upon the Secretary of War, with a request for prompt action. Resolutions were also passed unanimously, requesting Congress to appropriate money for two seagoing tugs to be used by the United States supervisor of the port of New York, to do patrol duty and prevent illegal dumping.

A plan of mutual insurance was adopted through the able efforts of Capt. R. C. Brittain, of Chicago, and a committee of five, who were assisted by Hon. W. P. Sutton, of Washington, D. C. A new constitution and by-laws were adopted on the report of Capt. W. Y. Johnson, of Norfolk, Va., chairman of the committee to which this question was submitted.

On Monday evening the wives of the visiting wayfarers were given a delightful reception in the Metropolitan hotel. On Tuesday morning the committees appeared before the congressional committees and presented the resolutions drawn up on Monday. On Wednesday the old officers were re-elected, with the addition of Capt. Fowler, of Camden, N. J., to the number of trustees. By invitation of Harbor No. 31, of Washington, the Grand Harbor took a trip to Mount Vernon by water on Thursday. On Friday evening a sociable good time was had at the Metropolitan hotel, among those present being Supervising Inspector General James A. Dumont, who is personally well known to all the members of the Grand Harbor.

Harbor No. 14, of Baltimore, Md., tendered a banquet to the officers and members of the Grand Harbor at the Eutaw House, Baltimore. Past Grand Capt. R. M. Spedden was toast master, and addresses were delivered by Grand Capt. William S. Van Keuren, W. Y. Johnson, of Norfolk; R. C. Brittain, of Chicago, and many others; but the banqueters were convulsed with laughter upon hearing Capt. Partee, of St. Louis, tell his famous bear story. Hon. Peter J. Campbell, of Baltimore, told of a young reporter fresh from the rural districts, whose first assignment was to write up a story about a new steamer in port, which was the hit of the evening. Senior Past Grand Capt. R. H. Ward recited a poem composed by himself, founded on the early history of the organization. The mode of benefit adopted by the organization is in the simple and plain one of assessing each member of the harbor who is also a member of the insurance association the sum of twenty-five cents upon the death of another member, while the fact that the grand officers for the harbor are in charge of the affairs guarantees the proper conduct of the business, besides which all the expenses of the management are avoided, as the officers perform this service gratutiously. A member permanently incapacitated from duty by any such catastrophe as loss of eyesight will receive the insurance money himself, a most commendable feature.

INTER-LAKE YACHTING.

The members of the Cleveland Yacht Club are making a very earnest endeavor to bring about a reorganization of the Inter-Lake Yaching Association, starting with a federation of the yacht clubs on Lake Erie and its tributary waters. Considerable correspondence has already passed, and Mr. Gus Leutkemeyer, to whom the work has been delegated by the club, has on file a number of letters relating to the scheme. The old Inter-Lake Association, of which ex-Mayor Gardner, of Cleveland, was commodore, died of inanition some three years ago. But since that time there has been a revival of interest in yachting, and the Cleveland club has made considerable progress in that time.

The proposal to revive the Inter-Lake Yachting association meets with hearty approval from every port, and the work done in this direction has been the means of stirring up Sandusky yachtsmen, who are organizing a local club there, spurred on by the prospect that the Inter-Lake association, when organized, will fix upon Put-in-Bay as the scene of the regatta of 1893. The Put-in-Bay Yacht club has not been heard from on the subject, but this is not surprising, as the residents of that Island hibernate, like bears, during the winter, if popular reports can be believed.

The most encouraging reports have been received by Mr. Leutkemeyer, from the Detroit Yacht Club and the Citizen's Yachting Association, of Detroit, the Toledo Yacht Club, and the Ohio Yacht Club, of Toledo, all of whom have already selected delegates to attend any meeting that may be held, with full power to act upon all matters relating to organization. The delegates have been informally invited by Mr. Leutkemeyer to arrange their affairs so they can be present at the annual banquet of the Cleveland Yacht Club, which will occur February 21, and to which they will receive formal invitations later. At that time a conference will be held, and an organization it is expected, will be effected at once.

NOTES OF THE IRON MINES.

W. D. Rees has lately been appointed general manager of the Ashland mine at Ironwood, and the rumor that the mine, from which the pumps were raised but a few days ago, is to be again operated, is current.

The real estate of the Buffalo Mining Co. was sold at sheriff's sale Monday, to Price McKinney, receiver for Corrigan, Ives & Co., of Cleveland. The purchase price was $320,000. All machinery and personal property of the company was sold for 80,000 to the same party at the mine Saturday. The mine is one of the best producers on the Marquette range, producing 400,000 tons annually.

The depression in the iron market has compelled the Brotherton Iron Mining Co. to entirely abandon operations at Ironwood. The pumps have been taken out and the mine is filling with water. The railroad has also taken up its tracks and the indications are that the mine will not be operated again very soon. It is said that it cannot be operated at a profit unless the price of ore is $4 per ton or more. Its annual shipments have been about eighty thousand tons.

Managers of a number of the idle mines of this county are making preparations to resume mining operations in a moderate way and on a scale of wages of but little more than one-half of what was paid at the time of closing down. The pay of miners, engineers, firemen, carpenters and machinists ranges from $1.25 to $1.40 per day, while common labor is paid but $1. Notwithstanding the low rate, employment is eagerly sought by the best of the men in idleness.—*Negaunee Herald.*

A FEARFUL EXPERIENCE.

Friday forenoon, January 19, L. G. Fittinger, aged 61 years, Frank Van Pelt, aged 35 years and a man by the name of Costing, aged 56 years, left Bay Port for a fish, going out on the ice in Saginaw Bay about a mile, each taking along the usual "fish shanty." They spent the day fishing, and that night as usual, slept in the shanties. Saturday morning they made the awful discovery that the ice on which they were, had broken loose from the ice near the shore and was floating out into the bay. They hastily endeavored to find a place on the large ice craft, which was near enough to the shore for them to land, but escape was impossible, as they had gone too far out into the bay. They continued to drift farther into the bay and Saturday night found them but one and one-half miles from the Little Charity Islands, the ice they were on reduced fully three-fourths in size, and the shanties, which contained their small supply of provisions, gone.

They thought, perhaps, that they might, by walking to a certain portion of the ice, reach Point Lookout, but the wind carried them further northeast and this faint hope vanished. They then hoped to drift near enough to Tawas to be able to make themselves heard on the land, but the wind shifted and they were carried back to within one-half mile of the northeast side of Big Charity islands.

Thus they drifted Saturday night, Sunday and Sunday night, the weather constantly growing colder. Early Monday morning the ice broke badly, and they were left on a piece about twenty feet square. Costing, who had become crazed by long suffering, started to reach land by jumping from cake to cake. About three hours later his desparing cry for help was heard by Fittinger and Van Pelt, and he was seen to sink amid the ice to rise no more.

The broken pieces of ice had during the night partially frozen together, and the two men resolved to make a last desperate struggle to reach land. They commenced to crawl on their hands and knees in a direction supposedly toward Caseville. Fittinger soon became exhausted and Van Pelt concluded to leave him and push on, Fittinger encouraging him to do so. Van Pelt succeeded in getting within about a quarter of a mile of the shore, and his joy can be imagined when he became aware that two men, who were hewing timber on the shore, noticed him.

They hurried to Caseville, secured a boat and help, and soon reached Van Pelt, although to him it seemed almost an age. He was rescued none too soon, as the ice he was standing upon was but about six feet square and his weight settled it to the extent that he was standing in almost a foot of water.

Fittinger was found about a mile and three-quarters farther out in the bay. He was so near dead that it was with difficulty that he could raise himself upon his elbows to see his approaching rescuers. The rescuers, after going as near to him as they could with the boat, found it necessary to send one of their number across a thin portion of ice on a push-sleigh. Fittinger was turned over on his back and dragged behind the sleigh to the boat, the ice not being strong enough to admit of anyone walking across.

In a short time after being rescued Van Pelt and Fittinger were as two dead men. During their terrible voyage and struggle for life they were nerved to almost superhuman efforts, and not until beyond all danger of the icy waters, did they fully realize the extent of their bodily injuries. They were cut, bruised and frozen. Their clothing, which it was necessary to remove by cutting, was worn entirely through in many places, exposing their badly-mutilated flesh.

NOTES FROM ALL PORTS.

A. Smith & Sons have a new steamer nearly completed at Algonac.

The revenue cutter Perry will be assigned to the New York station, her original orders to proceed to Puget Sound having been revoked.

Rich iron ore deposits are said to have been discovered near Beaver Bay, in Canada, on the north shore of Lake Superior.

The death of Capt. Andrew Clark, a retired lake vessel master, aged 62 years, is announced from Holland, Mich.

Daniel Bradley has been appointed collector of the port of Green Bay, vice Albert Hoppe, deceased. There were sixteen applicants for the position.

Capt. Thrall's new steam barge, which is building at Green Bay, is receiving her finishing touches. Her machinery is being put in, and she will be launched almost complete in the spring.

The two tugs engaged in fishing out of Kewaunee are meeting with good success, the Leathem taking up over a ton of fish at every lift, while the hauls of trout and white fish by the Coe, are proportionately large.

Capt. John Clow, first mate of the steamer Dixon, sailed from Beaver Bay to Two Harbors, a distance of over twenty miles, one day last week, with over four tons of fine trout.

The frame of a new barge built by the Calvin Co., at Garden Island, Ont., is up. The barge will be used in the river trade, and will carry about 30,000 bushels of grain.

The carrying capacity of the vessels now being built by Capt. James Davidson at West Bay City is 9,000 tons. They are building for a class in the United States Standard Register.

There are 116 sailing vessels with a tonnage of 39,298, registered in the Detroit district, 168 steam vessels with a tonnage of 118,331, and 14 barges. This district extends from Monroe to Mt. Clemens and New Baltimore.

Judge Hosmer, of Detroit, has ordered the steam yacht Sultana sold to satisfy the claims of a number of creditors, amounting in all to the snug sum of $5,499.78. The Sultana was built by the Davis Boat and Oar Co., for George S. Davis.

It is stated upon the best authority, namely, that of President Hill himself, that the choice of an upper lake dock for the Great Northern passenger boats has not yet been definitely settled. It is not yet known whether they will land at Duluth or Superior.

Judge Swan has fined Capt. P. L. Miller, of the steamer Joliet, $50 for violating the rules relative to vessels passing each other in the St. Clair canal. Judge Swan accompanied the fine with a lecture and an intimation that violators of the canal rules will be severely dealt with.

The Erie fishers have decided to go into winter quarters and Saturday the last of the fish tugs was hauled out. The fish tugs last in service from that port were the Hyner, Dash, Jose, Davis and Fred King. The winter's catch has been exceptionally good and the prices above the average for this season of the year.

The average shipment of flour by the Kewaunee Line is given as nearly five thousand barrels per day. The bulk of this is carried by the F. & P. M. No. 2. the No. 1 being in ordinary awaiting a revival of business. The City of Marquette makes irregular trips, carrying passengers and package freight, filling out her cargoes with flour, carrying salt on her return trips.

Under the direction of Engineer Joseph Ripley, Assistant Engineer C. Y. Dixon and a force of men are taking soundings for estimates for the 20 and 21 foot and Hay Lake channel improvements. The soundings are made through holes in the ice. In this work three ice boring machines are used. Each machine, as now perfected, will do as much work in a day as 15 axe men could accomplish.

The Kewaunee and Manitowoc papers are engaged in an altercation over the prominence of their respective ports. The *Pilot*, of the latter place, claims that Manitowoc is, according to the reports of the treasury department, third on the list of important points on Lake Michigan, while the Kewaunee *Enterprise*, states that owing to a number of line boats landing at both places, which are required to clear only from Manitowoc, the figures of the government have little value in the premises, and that Kewaunee stands far ahead of eighth place, as it is assigned in the Treasury figures.

LOCATING DERELICT SHIPS.

The question of destroying derelict ships in the North Atlantic, or towing them to the nearest port when possible, is of the highest importance to seafarers, shipowners, underwriters and the whole shipping world. We have for some years past persistently urged upon the authorities the desirability of cooperating seriously to that end with the United States and other maritime powers. Warships might be specially detailed for that purpose; and, by the same stroke of the pen, greater safety ensured to shipping, and greater experience of actual sea duties afforded to officers of our Royal Navy. The United States Navy Department has for several years taken an exceedingly active interest in warning navigators of drifting dangers likely to be encountered between North America and Europe. In a little while the North Pacific will be similarly cared for by that department. There is scarcely a steamship of any importance crossing the North Atlantic that does not furnish information to the Hydrographic Office at Washington relative to derelicts, icebergs, wind and weather immediately on arriving at a United States port. Sailing ships also afford reliable records of similar data. Every flag is represented on the roll of observers, and the results of their observations are embodied in the Hydrographical Bulletin issued weekly, and the North Atlantic Pilot Chart published about the first of every month. No other nation has any similar chart in existence. The Washington Pilot Chart is unique of its kind, and we are firmly convinced that the excellent reputation it enjoys among navigators of all nations is principally due to the fact that the compilers thereof are seamen who know full well exactly what the navigator in a hurry requires.

Not only do the Washington workers chart the derelicts and other dangers in the latest known positions, but they also take every care that the information actually reaches those for whom it is intended. We doubt whether one in a hundred shipmasters ever see the British Daily Weather Report, whereas the United States Pilot Chart is on board and in actual use in the chart-room of every vessel trading between Europe and America. Capt. Horman, now in command of a steamer of the Atlantic Transport line, once navigated his shattered ship back to a United States port aided solely by a Pilot Chart. He was at that time second officer, when a savage sea swept the vessel's decks, killed her master, seriously wounded the chief officer, and drowned several hundred cattle. The Pilot Chart was affixed to a part of the chart-room bulkhead that remained intact. Every other chart and navigation instrument had gone overboard with the wreckage. Charts of ocean meterology are published by the Meteorological Office from time to time, yet they are a matter of ancient history when completed. They are perhaps highly valuable to savants, but it is doubtful whether sufficient forethought is exhibited in differentiating between what is required for philosophers and what for deck officers of a tramp for example. Complexity in the diagrams and letterpress tends to repel all sailors except a very few. In the United States the weather workers connected with the land are landsmen under the control of the Department of Agriculture; those dealing with the sea are seamen. Hence division of labor ensures the most satisfactory results.—*Liverpool Journal of Commerce.*

MARINE PATENTS.

11,399. Propeller. Alfred W. Case, Highland Park, Conn. Filed October 16, 1893. Serial No. 488,349. Original No. 496,857, dated May 9, 1893. (Reissue.)

CLAIM.—1. A screw propeller comprising a hub with projecting blades, each of which has its uninterrupted working surface developed by a straight generatrix, and set on an angle across the axis of the hub and also inclined forwardly from the base of the working surface, whereby each blade operates to thrust outwardly as well as rearwardly when in motion. A screw propeller consisting of a hub with a plural number of projecting blades, each blade having a shank terminating in a lobe or fluke, said fluke having its working surface developed by a straight generatrix, and set on an angle across the axis of the hub and also inclined forward from the base of the working surface.

513,190. Ship's berth. Edward Lawson, Birmingham, England. Filed February 9, 1893. Serial No. 461,557. (No model.) Patented in England November 26, 1887. No. 16,288.

CLAIM.—In a berth turning up into an approximately vertical position, the combination with the berth frame, of brackets on the wall which carries the berth, and inclined rigid rods, one at each end of the berth, hinged at their outer ends to the berth frame, extending thence inwardly and downwardly, and movably bearing at their inner ends against brackets, the inner ends of said inclined rods moving relatively to said last mentioned brackets to alter the position of said rods as the berth is being turned up or down, whereby said rods rise with the berth as it is turned up and descend with the berth as it is turned down, of vertical pins standing up from the inner ends of the berth frame to a height above said frame equal to half the space required for the bedding between the berth when turned up and the wall against which the berth is disposed, and gudgeons on which the berth turns, carried by said projections at a distance from the wall equal to half the space required for the bedding between the berth when turned up and the wall, and disposed within the inner edge of the berth frame, and rearwardly extending links, horizontal when the berth is turned down, connecting said vertical pins with said gudgeons, whereby when the berth is turned up its lower edge occupies the same vertical position as that of the bottom of the berth when turned down, and sufficient space for the bedding is left between the berth when turned up and the wall.

513,466. Electrical means for propelling canal boats. Joseph Sachs, New York, N. Y. Filed February 15, 1893. Serial No. 462,402.

CLAIM—The combination with a boat, of a carriage movable along a suitable support adjacent to a waterway an electric propelling motor on said carriage, circuit connections, means for connecting the carriage and boat, whereby the latter will be propelled by the former, and a controlling device on the boat for the electric motor on the carriage. The combination of two rails placed side by side, a carriage having rollers adapted to bear against the upper and lower sides of said rails, springs causing said rollers to firmly grasp the rails, an electric motor on the carriage for driving it, means for connecting the carriage to a boat, and means traveling with said motor for regulating the same.

513,424. Life boat. August Schonemann, Hasserode, Germany. Filed April 28, 1893. Serial No. 472,210.

CLAIM.—A life or other boat having a frame built of steel hoops or stringers and steel rings covered with India rubber or leather and propelled by means of paddle wheels rotated by hand from the inside of the boat by means of cranked shafts, one of which is fitted with an eccentric, giving motion to the bellows, so as to introduce fresh air into the interior of the boat and expel the foul air therefrom.

CANADIAN FISHING REGULATION.

The deputation of the Rat Portage Board of Trade, referred to in last week's RECORD as being in Ottawa, Ont., waited upon Sir Charles Tupper, on Wednesday. They asked that permission be given to allow fishing in the Lake of the Woods and smaller lakes adjacent thereto, irrespective of existing regulations. It was pointed out that if the request were granted it would be a great boon to settlers in western Algoma, who would be in a position to sell their catch of fish to Americans for disposal at Minneapolis, St. Paul, Chicago, and other large cities of the western states. The granting of the request hinges upon the determination of jurisdiction as to whether the Dominion or the province should control the fisheries of the inland waters of Canada. At the present time negotiations are in progress between the Dominion and the province of Ontario looking toward a settlement of this question, and in the event of a favorable decision being given on this particular application, it will be altogether contingent upon the right of the Dominion to deal with the subject. Sir Charles H. Tupper, however, would not give any promise to the deputation. He asked that the request be made in writing specifying the particular lakes to which the deputation desired the proposed concessions to extend, and that then the department would consider the matter.

The Canadian government has adopted a regulation allowing Canadian fishermen to catch whitefish in the Detroit river at no season and other kinds of fish during a small part of the year only. At the same time the fishermen on the United States side are allowed to catch fish in the same waters for the whole year. The Canadian fishermen consider these fishing regulations a great hardship and have placed the matter in the hands of William McGregory, M. P. for North Essex, and H. W. Allen, M. P. for South Essex, to use their influence in parliament to have the regulation abolished. A petition from the fishermen will also be submitted to the Minister of Fisheries.

A Florida ship canal route is again being surveyed, this time by Mr. Frederick Ballou, of New York, the principal promoter of the new scheme being Mr. J. A. Jennings, of California. The route proposed is to commence at the Gulf end, about 15 miles below Cedar Keys, run northwest to Orange Lake, then across the lake and down the Orange river into the St. John's river, about 20 miles above Palatka. From this point the canal would go direct to St. Augustine Bay. This makes the total length of the water course about 100 miles. The canal proposed would be 225 feet wide and 37 feet deep. The survey is being made by private capital and no company will be organized until further data are secured.

NOTES.

THE Cleveland Rolling Mill Co. has been awarded the contract to supply the Youngstown Bridge Co. with about 800 tons of iron.

THE Crosby Steam Gauge and Valve Co. is out with a handsomely illustrated catalogue, with fac similes of some of the company's prize medals embossed on the cover.

AN announcement that the Pusey & Jones Co., of Wilmington, Del., were about to resume after having been shut down for two months, proves to be without foundation. The fact is that the company has not at any time since the business was first started in 1878 ceased to be in active operation during working days.

THE Cleveland City Forge and Iron Co., have ready for shipment to Montgomery, Ala., two cotton press links, which are claimed to be the largest ever made. They are 25 feet long, and 8½ feet wide inside, and weigh 28 tons. The firm recently shipped several car loads of heavy steel forgings to the Sandwich Islands.

THE Airdrie Iron Co., engineers and iron founders, successfully cast at their works, a few weeks ago a huge anvil block, 40 tons in weight, for the Portland Forge Co., at Kilmarnock. It is expected that about a fortnight will elapse before the casting is sufficiently cooled down for handling. This is by far the largest casting ever done at Airdrie.

THE Cleveland Steel Co., which recently purchased the Britton Iron & Steel Co., of Cleveland, has closed down the entire plant for the purpose of remodeling and replacing the old facilities with the latest improved methods for the manufacture of sheet steel in all its branches, and it is now erecting a steel melting department in connection with the works for the manufacture of the highest grades of steel.

AT the annual ball given by the M. E. B. A., of Detroit, all who were present noticed particularly a handsome floral piece representing a full rigged lake steamer. The length of the piece was about four feet, and it was complete in every detail. It was presented to the association by the Penberthy Injector Co., of Detroit, in recognition of the fact that nearly every member of the association in active service uses and recommends the Penberthy injector.

In the Omaha *Sunday World Herald*, of December 17th, appears a paragraph in regard to an alleged infringement of the patent of Merchant & Co.'s Star Ventilator. It would seem that the Star ventilator was specified for the Lincoln, Neb., Hospital for the Insane and that the contractor placed other ventilators in the building, which Merchant & Co. claimed to be infringements on their Star patents. Steps were accordingly taken to stop payment on the work pending an investigation. The matter was duly laid before the State Board of Public Lands and Buildings, with the result that the board decided to withhold a settlement with the contractor until he had made a satisfactory settlement with Merchant & Co. The latter have recovered heavy damages in the case.—*Metal Worker*, January 6.

THE *Manufacturers' Record* has frequently referred to orders for windlasses and capstans received by the American Ship Windlass Co., of Providence, R. I., through their Liverpool agents, Messrs. G. T. Soley & Co., for English and Scottish shipbuilders and shipowners. This week the company received notice from Its agents that they had sold one No. C. Providence crank power capstan and two No. E. Providence bar power capstans to the ship King David, 2,500 tons, building at Glasgow, Scotland; also one No. D. providence crank power capstan to J. R. Haws for his big ship Alcides, at Hull, England, besides two No. D. Providence bar power capstans for new bark No. 132, building by R. J. Evans & Co., at Liverpool, which vessel already had four No. C Providence crank power capstans from this American firm.

THE Inland Steel Co., of Chicago Heights, Ill., as successor to the Chicago Steel Works, has just started in business under more than ordinarily favorable circumstances, both by reason of the high esteem in which the old concern was held by the trade, and also because of the known ability and integrity of the members of the new company. A few weeks ago the Inland Steel Co. purchased the entire plant of the Chicago Steel Works, and the land and buildings at Chicago Heights originally intended for the Chicago Steel Co., and since that time the work of moving the machinery from the old quarters to the new, and erecting this, together with a large quantity of new and modern appliances, has been prosecuted as rapidly as possible. The result is that the works are now in full operation and comprise a thoroughly organized and well equipped plant, with a capacity much greater than the old works. The company announce that all the old shapes of steel bars, angles, tees, channels, agricultural shapes, harrow teeth and plow beams, will be continued, and new shapes and designs will be added as required.

WILLIAM L. BROWN, President.
WALTER F. COBB, Vice President and Treasurer.
W. I. BABCOCK, Manager.
O. R. SINCLAIR, Secretary and Asst. Treas.

Chicago Ship Building Company,

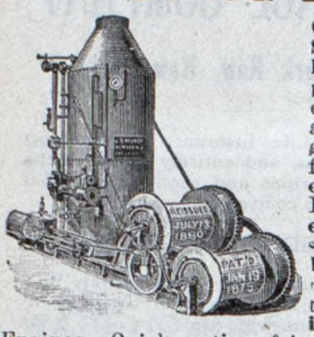
STEEL STEAM-SHIP BUILDERS.

101st Street and Calumet River.

LONG DISTANCE TELEPHONES:
SHIP YARD OFFICE, "SOUTH CHICAGO 40."
CHICAGO OFFICE, 1013 ROOKERY, "MAIN 3447."

SOUTH CHICAGO, ILL.

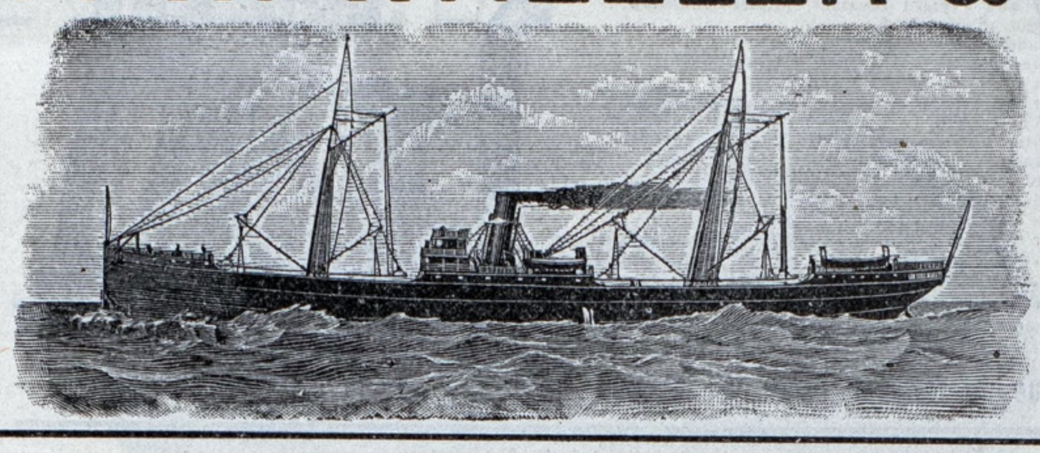
HOISTING ENGINES



Of any power and style. **Single and Double Cylinder,** with improved patent friction drums especially adapted for all classes of work. Single and Double Drum, friction and direct geared, link motion **Mining** Engines. Four, six and eight spool, lock clutch, self-pro elling **Bridge Erecting** Engines. Double cylinder double friction drum **Dock Building** and **Pile Driving** Engines. Quick motion, fric ion geared **Coal Hoisting** Engines. Powerful compound geared reverse link motion and friction geare **Quarry** Engines with or without Boilers. Any amount of reference given. Established 1870.

J. S. MUNDY,
22 to 34 Prospect St. NEWARK, N. J.

F. W. WHEELER & COMPANY.,



BUILDERS OF ALL KINDS OF
IRON, STEEL AND WOODEN SHIPS,
FOR LAKE OR OCEAN SERVICE.
West Bay City, Mich.

F. W. WHEELER, Prest. E. T. CARRINGTON, Vice-Prest.
F. L. GILBERT, Secretary.

FRONTIER IRON WORKS,

MARINE ENGINES,
DETROIT, MICH.

INCORPORATED 1794.

Insurance Company of North America.

CAPITAL, Paid up in Cash, - - $3,000,000.00
ASSETS, - - - - - - 9,744,513.70

CHARLES PLATT, President. WILLIAM A. PLATT, Vice-President.
EUGENE L. ELLISON, 2nd Vice-President. GREVILLE E FRYER, Sec'y & Treas.
JOHN H. ATWOOD, Assistant Secretary.

Lake Marine Department. GEORGE L. McCURDY, Manager, CHICAGO, ILLS.

MARINE AND INLAND INSURANCE.

ATLANTIC MUTUAL INSURANCE COMPANY,

(ORGANIZED 1842.) Office, 51 Wall Street, NEW YORK.

Insures against Marine and Inland Transportation Risks and issue Policies making Loss Payable in England.

Assets over $10,000,000 for the Security of its Policies.

The profits of the Company revert to the assured, and are divided annually upon the premiums terminated during the year; thereby reducing the cost of insurance. For such dividends, certificates are issued bearing interest until ordered to be redeemed, in accordance with the charter.

J. D. JONES, Prest. W. H. H. MOORE, Vice-Prest. A. A. RAVEN, 2nd Vice-Prest. J. H. CHAPMAN, Secy.

DREDGES & SHOVELS

STEAM DREDGES.
STEAM SHOVELS.
FOR ALL PURPOSES.

BUCYRUS STEAM SHOVEL & DREDGE CO.

SOUTH MILWAUKEE, WIS.

CAPITAL $300,000.

The Marine Bank Company,

Incorporated in 1891 under State Law. CLEVELAND, OHIO.
Successors to E. B. HALE & CO., established in 1852.

DIRECTORS:
W. H. BARRISS, President. H. C. RANNEY, Vice-President. W. B. HALE, Cashier.
C. E. BURKE. THOS. FITZPATRICK. THOS. H. WHITE. MARTYN BONNELL

Would be pleased to meet or correspond with any one whose present Banking relations are not entirely satisfactory, or who, for any reason, propose to open a new account.

We promise to make every effort to make our Bank a safe, agreeable and profitable place to do business.

FITZGIBBONS BOILER CO.

MANUFACTURERS OF
The Fitzgibbons Patent Vertical and Horizontal Marine Boilers,
WORKS AND OFFICE, OSWEGO, N. Y.

WOLVERINE DRY DOCK COMPANY

PORT HURON, MICHIGAN.
VESSEL REPAIRERS AND SPAR MAKERS.
Dock and Yard, South Side Black River—at Tunnel.

THE NATIONAL FEED WATER HEATER

With this Heater
No back pressure is possible.
No straight tubes to leak.
No contact of the water with steam or iron.
No chance for grease in the boiler.

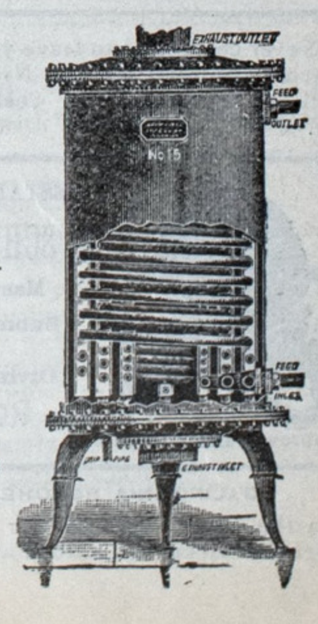
is pre-eminent in SIMPLICITY, EFFECTIVENESS and CHEAPNESS.

Made in 18 sizes, from 8 to 2,000 Horse Power capacity.
500,000 Horse Power in daily use.

Heats the Water up to 208° to 212° F.

In use on Largest Lake Steamers.
300 Electric Lighting Stations use this Heater.

With this Heater
Economy of price is assured.
Economy of coal is assured.
Economy of space is assured.
Reliability is assured.



Every description of Coils and Bends of Iron, Brass and Copper Pipe.

THE NATIONAL PIPE-BENDING COMPANY,

No. 76 River Street, New Haven, Conn.

☞ Send for Catalogue of Users and Prices.

New York Office: No. 15 Cortlandt Street.

Neversink Cork Jacket and Life Belt

Warranted 24 lb. Buoyancy and full Weight of Cork, according to requirements of U. S. Inspectors.

SUPERIOR TO ALL OTHERS.

RING BUOYS AND FENDERS.

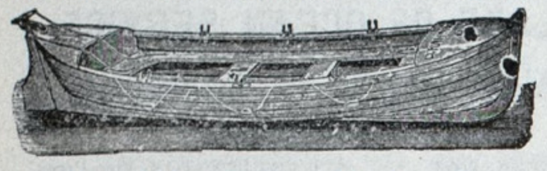
Safest, Cheapest.

Approved and adopted by the U. S. Board of Supervising Inspectors.

Also adopted by the principal Ocean, Lake and River Steamer Lines as the only Reliable Life Preserver. Vessels and the trade supplied. Send for catalogue.

Awarded Four Medals by World's Columbian Exposition,

Metallic and Wooden Life Boats.



Metallic Life Rafts, Marine Drags.

Manufacturer of Woolsey's Patent Life Buoy, which is the lightest, cheapest and most compact Life Raft known. Send for Illustrated Catalogue.

D. KAHNWEILER,

19 and 21 Roosevelt St., New York.

☞ Get our prices before buying elsewhere.

Remember the patrons of the Nickel Plate Road can take a through car for California, after March 1st, weekly. 5-9

CENTRIFUGAL PUMPS for COAL,

SAND OR DREDGING.

Wrecking Pumps a Specialty.

SUPERIOR TO ANY OTHER

16,000 IN USE.

Our Water Ballast Pump will throw more water with less steam than any other. Photographs and estimates on application.

MORRIS MACHINE WORKS,

Baldwinsville, N. Y.

HENION & HUBBELL, Agents,

55 and 57 N. Clinton St., Chicago, Ill.

A THROUGH CAR TO CALIFORNIA

via the Nickel Plate Road, once a week after March 1st. 5-9

PATENTS

CAVEATS, TRADE MARKS COPYRIGHTS.

CAN I OBTAIN A PATENT? For a prompt answer and an honest opinion, write to **MUNN & CO.**, who have had nearly fifty years' experience in the patent business. Communications strictly confidential. A **Handbook** of Information concerning **Patents** and how to obtain them sent free. Also a catalogue of mechanical and scientific books sent free.

Patents taken through Munn & Co. receive special notice in the **Scientific American**, and thus are brought widely before the public without cost to the inventor. This splendid paper, issued weekly, elegantly illustrated, has by far the largest circulation of any scientific work in the world. **$3** a year. Sample copies sent free.

Building Edition, monthly, $2.50 a year. Single copies, **25** cents. Every number contains beautiful plates, in colors, and photographs of new houses, with plans, enabling builders to show the latest designs and secure contracts. Address

MUNN & CO., NEW YORK, **361** BROADWAY.

Never compelled to leave your car until you reach California, for the Nickel Plate Road will run a through car, weekly, after March 1st. 5-9

ESTABLISHED, 1844.

A. SCHRADER & SON

Manufacturers of

Submarine Armor

AND

Diving Apparatus.

32 ROSE ST., N. Y

Improved Bolt Helmet.

CALIFORNIA REACHED EASILY

via the weekly through car which will run over the Nickel Plate Road after March 1st. 5-9

ESTABLISHED 1871. INCORPORATED 1893.

MONTAGUE IRON WORKS CO.,

MONTAGUE, MICH.

MANUFACTURERS OF

Marine and Stationary Engines

AND BOILERS OF ALL KINDS.

Heavy Castings a Specialty. Prices Quoted on Application.

Fore and Aft Compound Marine Engines.

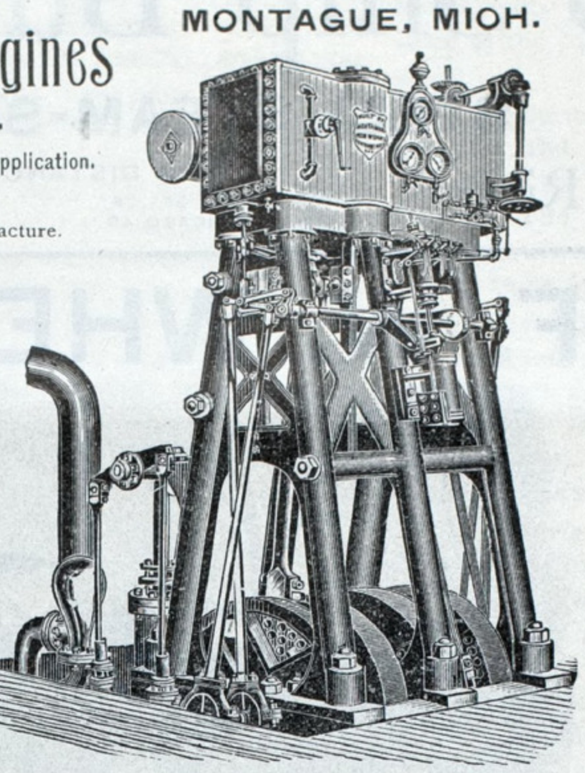
The Engines in the following boats are of our manufacture.

Edward Buckley, Manistee, 18 and 36x30.
Sachem, Grand Haven, 21 and 38x36.
Charles A. Street, Chicago, 20 and 36x36.
Isabella J. Boyce, Michigan City, 19 and 32x26.
M. T. Greene, Chicago, 20 and 36x30.
Passenger and Freight Steamer, Mabel Bradshaw, Muskegon, 16 and 28x 6.
Ionia, Grand Haven, 24 and 46x42.
Survey Steamer, W. S. Hancock, 12 and 21x20.
Mark B Covell, Manistee, 18 and 30x26.
Passenger and Frieght Steamer, Bon Voyage, Saugatuck, 16 and 30x26.
Tug, Hunter, Chicago, 15 and 28x22.
Tug, Edward G. Crosby, Muskegon, 16 and 30x24.
Oval Agitator, Chicago, 14 and 28x20.
Tug, Peter Coates, Sault Ste. Marie, 16 and 20x16.
Luella H. Wortnington, Cedar River, 19 and 36x30.
Passenger Steamer, E. G. Maxwell, Pentwate 14 and 28x20.

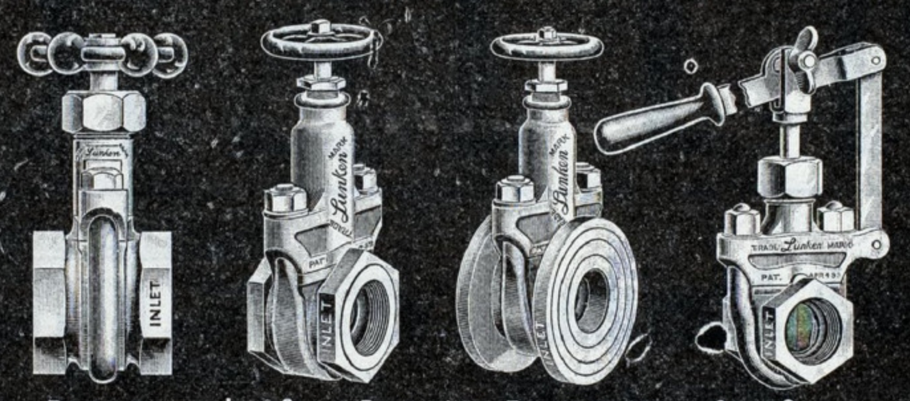
The engraving represents our 20 and 36x36 Fore and Aft Compound Marine Engine. We build them all sizes and guarantee them to give satisfaction.

Prices furnished on application.

Montague Iron Works Co., Montague, Mich.



SPECIFY AND INSIST UPON THE "LUNKEN" RENEWABLE SEAT GATE VALVE AND YOU WILL GET THE BEST.

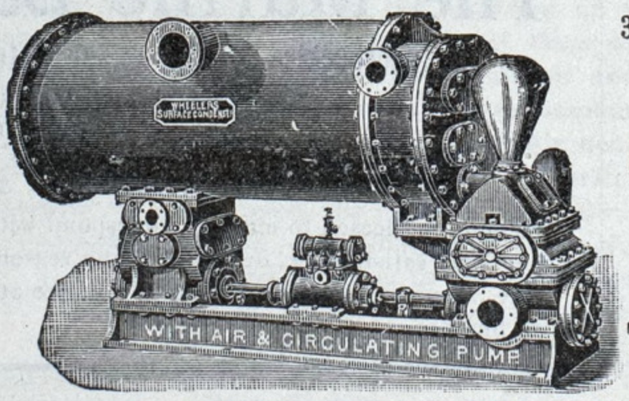


BRASS. IRON SCREW ENDS. IRON FLANGE ENDS. QUICK OPENING.

WARRANTED THE MOST PERFECT VALVE MADE FOR LIGHT AND HEAVY PRESSURE.
IN BRASS ¼" TO 3." IRON SCREW AND FLANGE ENDS 2" TO 12".
CIRCULARS AND PRICES UPON REQUEST.
FOR SALE BY LEADING DEALERS EVERYWHERE.

THE LUNKENHEIMER COMPANY, CINCINNATI, O. U.S.A.
SOLE MAKERS OF THE "LUNKENHEIMER" SPECIALTIES.

WHEELER CONDENSER AND ENGINEERING CO.



39 & 41 Cortlandt St., NEW YORK

Proprietors and Manufacturers of

WHEELER'S IMPROVED

Patent SURFACE CONDENSERS

ALSO THE

Wheeler "Admiralty" Condenser,

WITH PATENT SCREW GLANDS,

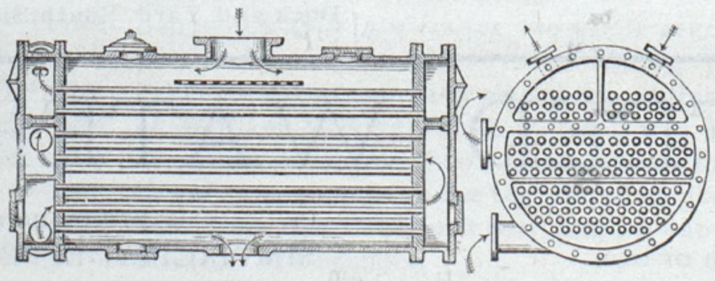
The Wheeler-Lighthall Condenser

With Patent Waterproof Packing.

LIGHT WEIGHT SURFACE AND JET CONDENSERS, FOR STEAM YACHTS, ETC., A SPECIALTY

F. P. BUDDEN, President. W. E. VOLZ, Treas. and Gen'l Mgr.

Standard Condenser Co.,



SOLE BUILDERS

Patent Combined Surface Condenser and Feed Water Heater.

BUILDERS OF

LIGHTHALL

Surface Condensers,

Tube Heads, Patent Brass Screw Glands, Packings, Etc.

CONDENSER REPAIRS.

15 State St., New York.

SEND FOR CIRCULAR.

Established at Baldwinsville, 1861. Removed to Syracuse, 1881.

The Baldwinsville Centrifugal Pump.

The oldest, best and cheapest Centrifugal Pump in the market.

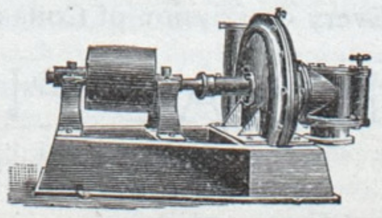
Capacity for 100 to 40,000 Gallons per Minute.

All sizes up to 12 in. delivery, in stock.

Address for catalogue and prices.

IRVIN VAN WIE, MANUFACTURER,

48-50 South West Street, Syracuse, N. Y.



SAND PUMPS A SPECIALTY.

CAPTAINS, ENGINEERS

And men engaged in similar occupations who have been unable to obtain Life Insurance on account of their occupation should correspond with the

NATIONAL MUTUAL INSURANCE COMPANY,

World Building, Park Row, New York.

This Company offers Life Insurance on the most liberal and progressive terms, and entirely devoid of the unnecessary and arbitrary rules and requirements that are current among insurance companies generally.

THE ADJUSTED RATE PLAN

Is original with this company, and is an entirely new feature in life insurance. It enables the company to provide insurance to persons who are

FIRST CLASS RISKS AT LOWER RATES

Than can any equally sound institution that places all its risks at one rate, wholly ignoring the importance of charging each policy holder a premium equitably proportioned to the risk assumed. It avoids also the

UNREASONABLE AND PURELY ARBITRARY TECHNICALITIES

Which have so long worked injustice to applicants and agents, and while it does not contemplate in any sense the acceptance of an applicant not safely insurable, it recognizes the fact that a large number of risks usually declined on account of their occupation, etc., can be safely insured at a fair premium.

THE MANAGEMENT OF THE COMPANY IS CONSERVATIVE.
ITS EXPENSES ARE MODERATE.
ITS POLICIES ARE MOST LIBERAL.
ITS PAYMENTS ARE PROMPT.

N. W. BLOSS, President.
J. F. MORSE, G. F. POTTER, Vice-Presidents.
W. G. LORD, Secretary
D. E. ANTHONY, Counsel.

Send for Circulars. Agents Wanted.

Liberal Contracts. Unequaled Opportunities.

PATENTS

Promptly secured. Trade-Marks, Copyrights and Labels registered. Twenty-five years experience. We report whether patent can be secured or not, free of charge. Our fee not due until patent is allowed. **32 page Book Free.**

H. B. WILLSON & CO., Attorneys at Law, Opp. U. S. Pat. Office. **WASHINGTON, D. C.**

If you are interested in

ADVERTISING,

you ought to be a subscriber to PRINTERS' INK; a journal for advertisers.

PRINTERS' INK is issued weekly, and is filled with contributions and helpful suggestions from the brightest minds in the advertising business.

PRINTERS' INK costs only two dollars a year. A sample copy will be sent on receipt of five cents.

ADDRESS

PRINTERS' INK,

10 SPRUCE STREET, - NEW YORK.

E. G. ASHLEY,

CHOICE FAMILY GROCERIES.

ALSO ALL KINDS OF

Fresh, Salt and Smoked Meats.

Vessel orders attended to day and night. Goods delivered by Steam Yacht "Maggie D."

36 & 38 Summit Street, TOLEDO, O

CALIFORNIA.

The well known California Excursions of A. Phillips & Co., beginning March 1st, will change their route from the Canadian Lines to the Fitchburg, West Shore and Nickel Plate Roads, leaving Boston, as in years past, every Tuesday. These excursions combine comfort and economy in the greatest degree and have always been personally conducted and given entire satisfaction. For full particulars and general information about California, address agents of the Nickel Plate Road or A. Phillips & Co., No. 446 Broadway, Albany, N. Y. 5-9

IRA B. BASSETT. GEORGE PRESLEY, JR. A. R. TRAIN.

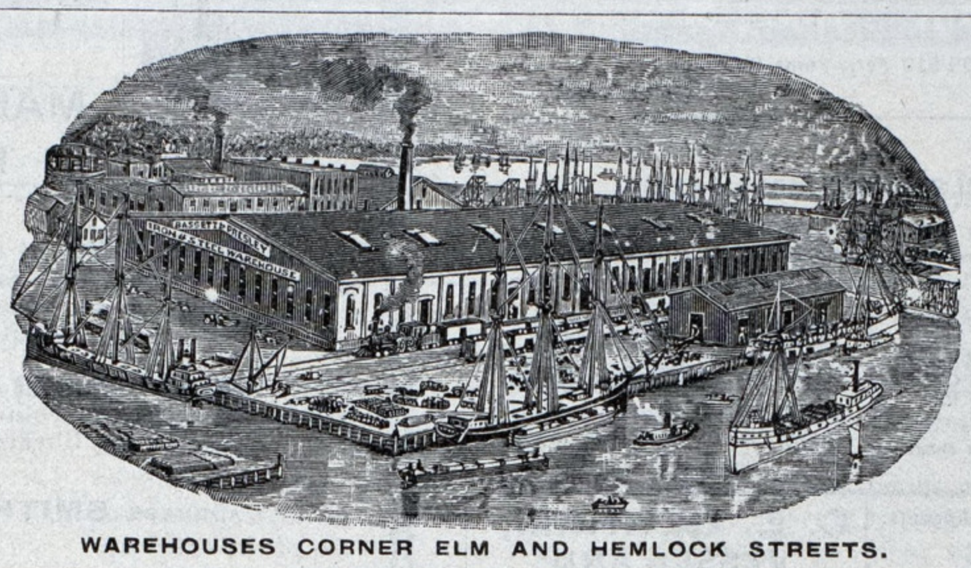
BASSETT, PRESLEY & TRAIN,

Iron and Steel Warehouses.

SHIP PLATES, SHIP SPIKES, ANGLES, BEAMS, CHANNEL AND TEE IRON, BOILER TUBES, BOILER, TANK AND COOPER RIVETS, STEEL BOILER PLATES, BAR, BRIDGE AND CAR IRON, HOOPS, BANDS AND SHEET IRON.

CLEVELAND, · · · · · OHIO.

WAREHOUSES
17 TO 31 MERWIN ST.
AND COR. ELM AND
HEMLOCK STS.



WAREHOUSES CORNER ELM AND HEMLOCK STREETS.

GENERAL
OFFICES
17 MERWIN
STREET.

BURDEN IRON COMPANY BOILER RIVETS,

THE STANDARD AND ONLY RIVET USED BY ALL FIRST-CLASS BOILER MAKERS IN THE U. S.

Our Correspondents will please note that the Western Union Telegraph Co.'s Wires are connected with our Office, and much time will be saved in the transmission and delivery of Messages to us if sent via that Company.

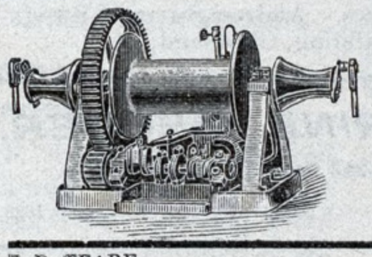
ACME SHAFTING. We own and control the sale of this celebrated brand and carry a full stock of all sizes and lengths. AGENTS FOR THE DIAMOND STATE HORSE SHOES.
Boiler, Bridge and Tank Plates, Nails, Boat and Railroad Spikes, Smoke Stack Rivets, Boiler Patch Bolts, Open Hearth Steel.

ARCHES AND STRAPS FOR VESSELS A SPECIALTY.

LAWRENCE CORDAGE WORKS,

MANUFACTURERS OF

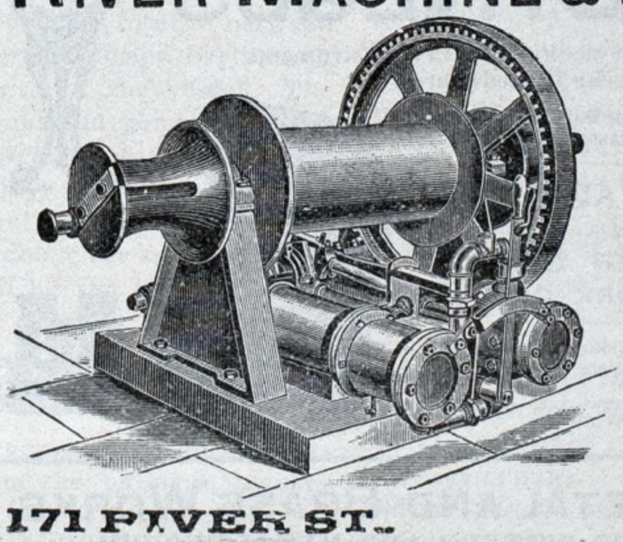
ROPE
AND BINDER TWINE,
46 SOUTH STREET, NEW YORK.



JACKSON & CHURCH,
BUILDER OF DUPLEX HOISTING AND DECK ENGINES.
Plain Finished and Automatic ENGINES, From Heavy Patterns at Moderate Prices.
Vertical, Horizontal, Marine and Locomotive BOILERS Strictly First-Class and Highest Test.
SEND FOR CIRCULAR AND PRICES. SAGINAW, MICH.

T. R. TEARE. M. THOMAS.

RIVER MACHINE & BOILER WORKS



Marine and Stationary
ENGINES, BOILERS AND
DECK HOISTING
ENGINES.

Starting, Stopping, Reversing and Lowering all done by working one Lever.

SOLE AGENTS FOR
St. John's Self-Adjusting Cylinder Packing.

171 RIVER ST. CLEVELAND, O.

THE CUDDY-MULLEN COAL COMPANY

DEALERS IN COAL. Docks at Government Pier, Whiskey Island, and Adjoining Globe Dry Dock.

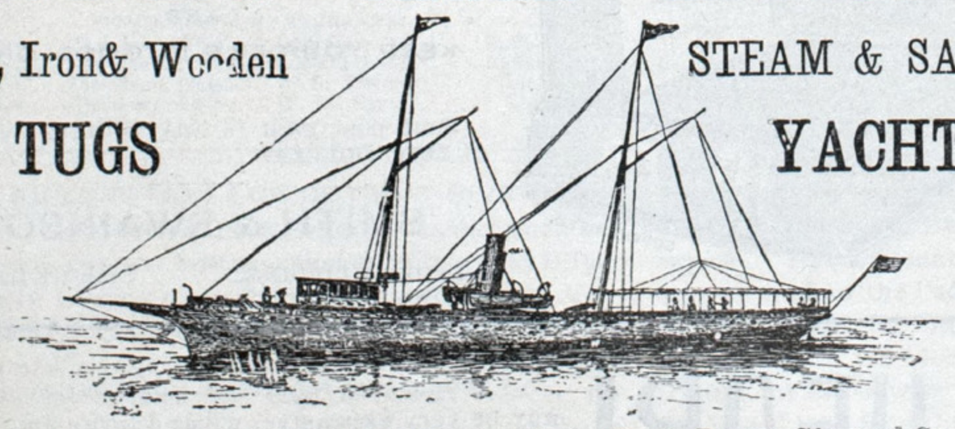
All fully equipped with Revolving Derricks; also, Lighter Carrying Derrick, and One Hundred Two and One-Half Ton Buckets.
Main Office, 81 Perkins Building, East Side of Main Street Bridge.
Dock Office, 127 West River St., Cleveland, Ohio. Telephone No. 8.
Boats Coaled Day and Night. Docks at Amherstburg and Sandwich, Ontario

J. H. OWEN, Prest., Chicago. F. H. VAN CLEVE, Sec'y, Escanaba. Capt. GEO. BARTLEY, Supt., Escanaba.

ESCANABA TOWING & WRECKING COMPANY, Escanaba, Mich.

Tugs, Lighters, Steam Pumps, Hawsers, Hydraulic Jacks & Diving Appliances always ready.
TUG MONARCH.—Engine Compound, Cylinder 16 & 30 in. diameter, 30 in. Stroke, Steam Pressure allowed, 125 lbs.
TUG DELTA.—Cylinder 20 by 22, Steam Pressure allowed, 105 lbs.
TUG OWEN.—Cylinder 20 by 20, Steam Pressure allowed. 104 lbs.
CENTRIFUGAL PUMPS. SEVEN AND FOURTEEN INCH SUCTION

LIFE BOATS. YAWLS. LIFE RAFTS.
Steel, Iron & Wooden STEAM & SAIL
TUGS YACHTS.



All kinds of Pleasure Boats, Fishing & Hunting Boats, Shells, Barges, Gigs and Canoes.

DETROIT BOAT WORKS, DETROIT, MICH.

STANDARD TECHNICAL BOOKS AND PERIODICALS.

Marine Engines and Dredging Machinery (Man), Illustrated by over 150 Steel Plates and 295 Wood Engravings, Showing the Engines of Leading Screw Steamships of England and Other Nations	$18.00
American Marine (W. W. Bates)	4.00
American Marine and the Marine Record	5.00
"Wrinkles" in Practical Navigation (Lecky)	6.00
"Wrinkles" in Practical Navigation and The Marine Record	7.00
Practical Seamanship (Todd & Whall)	7.50
Practical Seamanship (Todd & Whall) and The Marine Record	7.50
Treatise on Screw Propeller, Screw Vessels and Screw Engines, with The Marine Record	5.00
Steam Engine Catechism (Grimshaw)	2.00
Manual of Marine Engineering	5.00
Drawing and Rough Sketching for Marine Engineers (Donaldson)	2.50
Manual of the Steam Engine (Thurston) Part I	7.50
Manual of the Steam Engine (Thurston) Part II	8.50
Scott's Coast Pilot	1.50
Beeson's Inland Marine Guide, Special Edition for 1894	5.00
Great Lakes Register of Shipping	5.00
Dominion Admiralty Court Practice (Howell)	6.25
Law of Bills of Lading (Porter)	

Copies of any of the above Books or Periodicals, or any others relating to Steam Power or Shipbuilding, in any of their details, furnished at proportionately low rates by addressing

SMITH & SWAINSON, PUBLISHERS THE MARINE RECORD,
Leader Building, Cleveland, Ohio.

GARLOCK PACKINGS.

Our Elastic Ring, Sectional, Spiral and Special Water Packings are the leaders in this line. For Steam, Water, Ammonia, High Speed Work and all places where packings are used they excel. Try our Special Water Packing, fully guaranteed for water end of pumps. See that our trade mark is on each package. Correspondence solicited.

NEW YORK, 136 Liberty St. PITTSBURGH, 99 First Ave.
CHICAGO, 94 Franklin St. OMAHA, NEB., 922 Farnam St.
PHILADELPHIA, 28 N. 5th St. ST. LOUIS, 415 Morgan St.

THE GARLOCK PACKING CO.

Factories and Main Offices: PALMYRA, N. Y. ROME, GA.

THOS. WILSON,
MANAGING OWNER WILSON'S TRANSIT LINE,
General Forwarder, Freight and Vessel Agent. CLEVELAND, O.

C. R. JONES & CO., VESSEL AGENTS
FIRE AND MARINE INSURANCE.
Nos. 501, 502 and 503 Perry-Payne Bldg., CLEVELAND, O.

JOHN MITCHELL. JOHN F. WEDOW. ALFRED MITCHELL.
MITCHELL & CO., Vessel and Insurance Agents,
Office Telephone, 767. 508-509-510 Perry-Payne Building,
Residence John Mitchell, 3506. CLEVELAND, O.

M. J. GALVIN. CAPT. ALEX. CLARK. J. A. BOLAND.
GALVIN, CLARK & BOLAND, Vessel and Insurance Agents.
TELEPHONE 892. NO. 60 MAIN STREET, BUFFALO, N. Y.

ESTABLISHED 1857.
THOMAS MARKS & CO.,
Merchants, Forwarders and Ship Owners.
PORT ARTHUR, CANADA.
N. B.—Special attention given to chartering vessels.

C. W. Elphicke. A. L. Fitch. Jas. A. Myers.
C. W. ELPHICKE & CO.,
Vessel Owners and Agents,
MARINE UNDERWRITERS.
6 & 8 Sherman St., CHICAGO,
Rooms 10, 11 & 12 Wheeler Block.
Telephone 1194.

A. A. Parker. James W. Millen. B. W. Parker.
PARKER & MILLEN,
Vessel & Insurance Agents.
Iron Ore & Coal Cargoes a Specialty.
Rooms 3 & 4 15 Atwater St., West.
DETROIT, MICH.

Calvin Carr. G. C. Blair. John Mitchell.
CARR & BLAIR
VESSEL AND INSURANCE AGENTS,
12 Sherman St. CHICAGO.

Marine Reporters. Vessel Agents.
HARVEY'S MARINE BUREAU.
THOS. R. HARVEY, Mgr.
Sault Ste. Marie, - Mich.

C. E. BENHAM,
VESSEL AND
Insurance Agent,
613 Perry-Payne Bldg.
Telephone 170. CLEVELAND, O.

H. W. Cook. J. B. Clough. Capt. J. A. Calbick.
Cook, Calbick & Co,
Vessel Agents and Underwriters,
No. 23 Sherman St. Chicago, Ill.
Rialto Building.
Telephone Main 56.

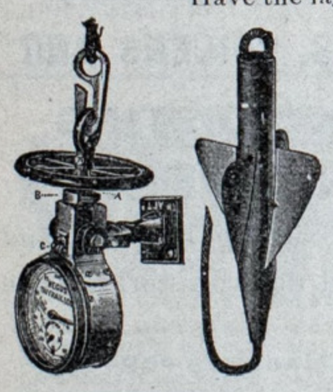
J. G. Keith. D. Sullivan.
J. G. KEITH & CO.
VESSEL AND INSURANCE AGENTS,
140 and 141 Rialto Bldg. CHICAGO.
Telephone No. 3658.

JOHN PRINDIVILLE,
VESSEL AND INSURANCE AGENT,
12 Sherman Street,
Telephone Main 129. CHICAGO.

$2.00 or $1.00 Pays for one year or six months respectively and THE MARINE RECORD gives you all the news of the lakes. Address SMITH & SWAINSON, Leader Building, Cleveland, O.

J. P. BROGAN, MARINE GROCER,
239-243 Pearl St., Cleveland, Ohio.
STEAM LAUNCH DELIVERY. Telephone 1628.

T. S. & J. D. NEGUS
Have the largest and finest stock of Nautical Instruments and Charts in the United States.

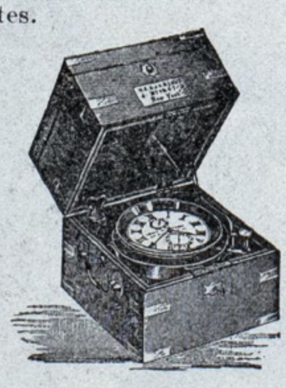


Estimates given for Outfits of Steamers and Pleasure Yachts.

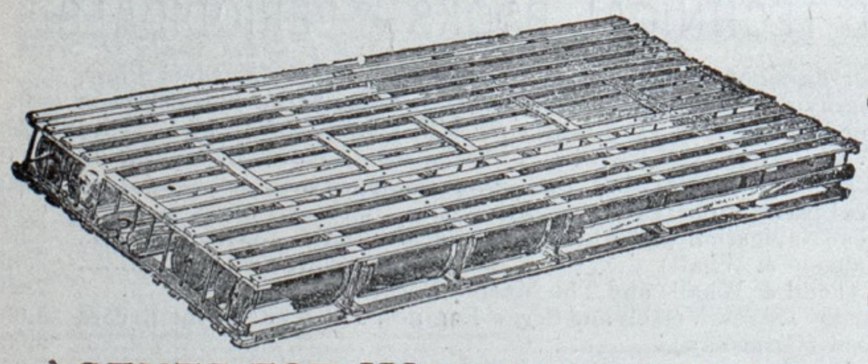
COMPASS ADJUSTERS.
Send for Catalogue and Almanac.
140 WATER STREET, NEW YORK CITY.

Every attention given to Trade Orders.

Try the new Negus Log. Best in the World.



DETROIT SHEET METAL AND BRASS WORKS:
MARINE COPPERSMITHS, PIPE FITTERS AND METAL WORKERS.



SOLE MANUAFCTURERS OF THE
CLARK PATENT METALLIC LIFE RAFT.
Endorsed by the Board of Supervising Inspectors.

AGENTS FOR WORTHINGTON STEAM PUMPS.
Works 64 to 72 Orleans Street, DETROIT, MICH.

SWAIN WRECKING CO.,
Tugs { FAVORITE AND SAGINAW.
Telegraph { PARKER & MILLEN, Detroit, Mich. Capt. M. SWAIN, Cheboygan, Mich.

MARINE AND INLAND INSURANCE.
SUN INSURANCE COMPANY
SAN FRANCISCO, CAL.
INLAND MARINE DEPARTMENT, CHICAGO, ILLS.
R. E. RISPIN, MANAGER, 6 AND 8 SHERMAN ST.

...THE...
MARINE RECORD SOUVENIRS.

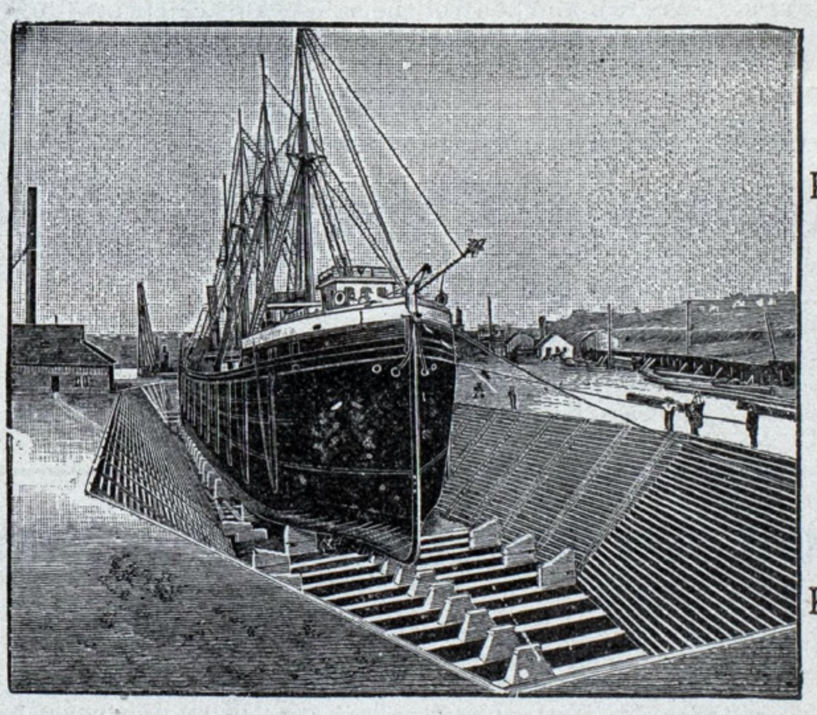
NO. 1 Contains Sixteen of those large 10x14 inch Photogravure and Phototype Supplements, the largest and most expensive ever issued by a marine paper. Neatly bound. Price $3.00. Limited number.

NO. 2 Contains Twenty-one Phototypes of Lake Boats and is the most complete volume of the kind published. Worthy of a place in any library. Price 30 cents, post-paid.

ADDRESS SMITH & SWAINSON,
LEADER BUILDING. CLEVELAND, OHIO.

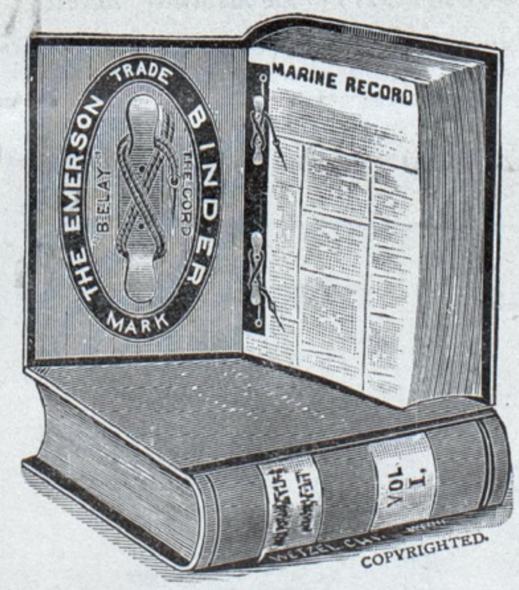
THE SHIP OWNERS DRY DOCK CO.

OLD DOCK
Length of Keel Blocks 340 ft.
Width of Gate 50 ft.
Depth of Water on Keel Blocks 16 ft.



NEW DOCK
Length of Keel Blocks 300 ft.
Width of Gate 52 ft.
Depth of Water on Keel Blocks 14 ft.

GENERAL REPAIR WORK PROMPTLY ATTENDED TO.
Being equipped with Lucigen Lights we can do work at night as well as day.
TELEPHONE 1635. Foot of Weddell St., CLEVELAND, O.



:(THE):
EMERSON BINDER
WILL HOLD 52 NUMBERS
· OF ·
THE MARINE RECORD
· AND ·
KEEP YOUR FILE IN GOOD ORDER.

Sent post paid to any address on receipt of ONE DOLLAR.

SMITH & SWAINSON,
LEADER BUILDING, CLEVELAND, O.

CHEAP!

An article that requires a small outlay of money may be very expensive, while a large amount well placed might be economical.

Marine Record advertising has proven to be most economical.